# SUPPLEMENT.


# The Mining Journal,

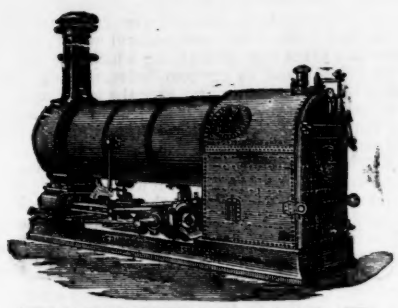
## RAILWAY AND COMMERCIAL GAZETTE:

**FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.**

[*The* MINING JOURNAL *is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.*]

No. 2362.—VOL. L. LONDON, SATURDAY, NOVEMBER 27, 1880. PRICE (WITH THE JOURNAL) SIXPENCE. PER ANNUM, BY POST, £1 4s.

# ROBEY & CO., ENGINEERS, LINCOLN.



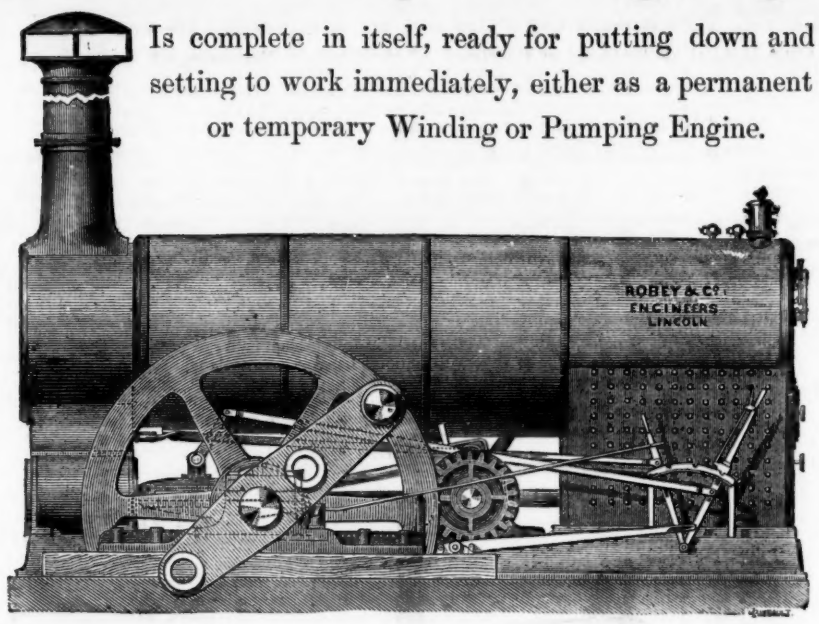
THE PATENT ROBEY FIXED ENGINE AND LOCOMOTIVE BOILER COMBINED
4 to 50-horse power.

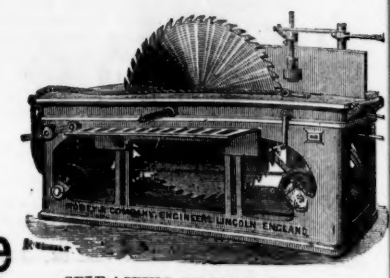
## NOTICE.

TO COLLIERY PROPRIETORS, MINE OWNERS, &c.

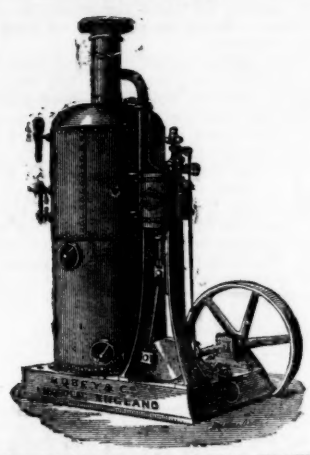
## The Patent "Robey" Mining Engine

Is complete in itself, ready for putting down and setting to work immediately, either as a permanent or temporary Winding or Pumping Engine.

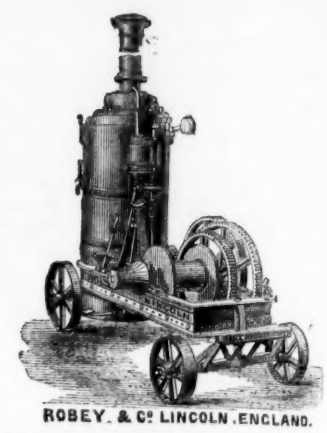


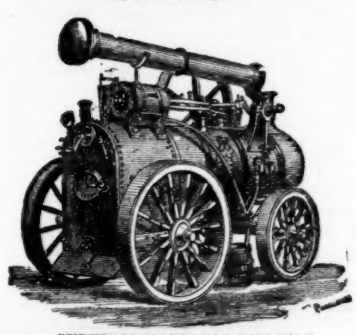
SELF-ACTING CIRCULAR SAW BENCH.



VERTICAL STATIONARY STEAM ENGINE AND PATENT BOILER COMBINED,
1½ to 16 horse power.



ROBEY & Co LINCOLN ENGLAND.
IMPROVED BARROW LIFT, or VERTICAL HOISTING ENGINE.



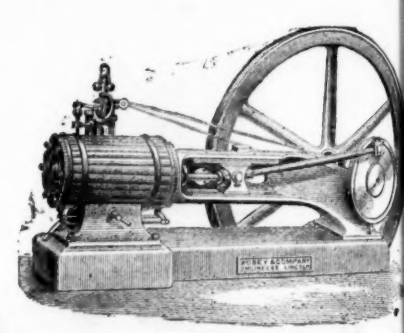
SUPERIOR PORTABLE ENGINES,
4 to 50-horse power.

ALL SIZES KEPT IN STOCK, FROM 6 TO 50-H.P. NOMINAL.

For particulars and prices, apply to the

PATENTEES AND SOLE MANUFACTURERS,

## ROBEY & CO., ENGINEERS, LINCOLN.



HORIZONTAL FIXED ENGINES,
4 to 60-horse power.

---

## ELLIS LEVER AND CO.,

## BRATTICE CLOTH MANUFACTURERS,

**WEST GORTON WORKS,**

MANCHESTER.

ESTABLISHED A QUARTER OF A CENTURY

---

## ALEX. CHAPLIN AND CO.,

CRANSTONHILL ENGINE WORKS, GLASGOW,

PATENTEES AND SOLE MANUFACTURERS OF

CHAPLINS' PATENT STEAM CRANES, HOISTS,
LOCOMOTIVES, AND OTHER ENGINES AND BOILERS

LONDON HOUSE:—
No. 63, QUEEN VICTORIA STREET, LONDON.

---

## JOSEPH FIRTH AND SONS'
## New Patent Brick-making Maohine

Embraces the following advantages—viz.:

Simplicity, strength, and durability. Compactness and excellence of mechanica arrangements, large producing capabilities, moderate cost.

It makes two bricks at once, and will make 2,000 to 14,000 plastic pressed bricks per day, hard enough to go direct to the kiln without drying; or it will make the bricks thoroughly plastic if required. For works requiring a machine at less cost the machine is made to turn out one brick at once, and is capable of producing 8000 bricks per day.

The Machine can be seen at work daily at the Brickworks of the Patentees, JOSEPH FIRTH AND SONS, WEBSTER HILL, DEWSBURY, as also their Patent Gas Kiln for Burning Bricks, which possesses the following amongst other advantages, viz.:—Economy in Fuel, Rapidity and Quality of Work, even Distribution of Heat, and Total Consumption of Smoke.

[*See Illustrated Advertisement every alternate week.*]

---

SecondEdition. Just Published, price 3s. 6d.

A NEW GUIDE TO THE IRON TRADE OR MILL MANAGERS' AND STOCK-TAKERS' ASSISTANT;
Comprising a Series of New and Comprehensive Tables, practically arranged to show at one view the Weight of Iron required to produce Boiler-plates, Sheet-iron, and Flat, Square, and Round Bars, as well as Hoop or Strip Iron of any dimensions. To which is added a variety of Tables for the convenience of merchants, including a Russian Table.

BY JAMES ROSE.
Batman's Hill Ironworks, Bradley, near Bilston.

OPINIONS OF THE PRESS.

"The Tables are plainly laid down, and the information desired can be instantaneously obtained."—*Mining Journal.*

"900 copies have been ordered in Wigan alone, and this is but a tithe of those whom the book should commend itself."—*Wigan Examiner.*

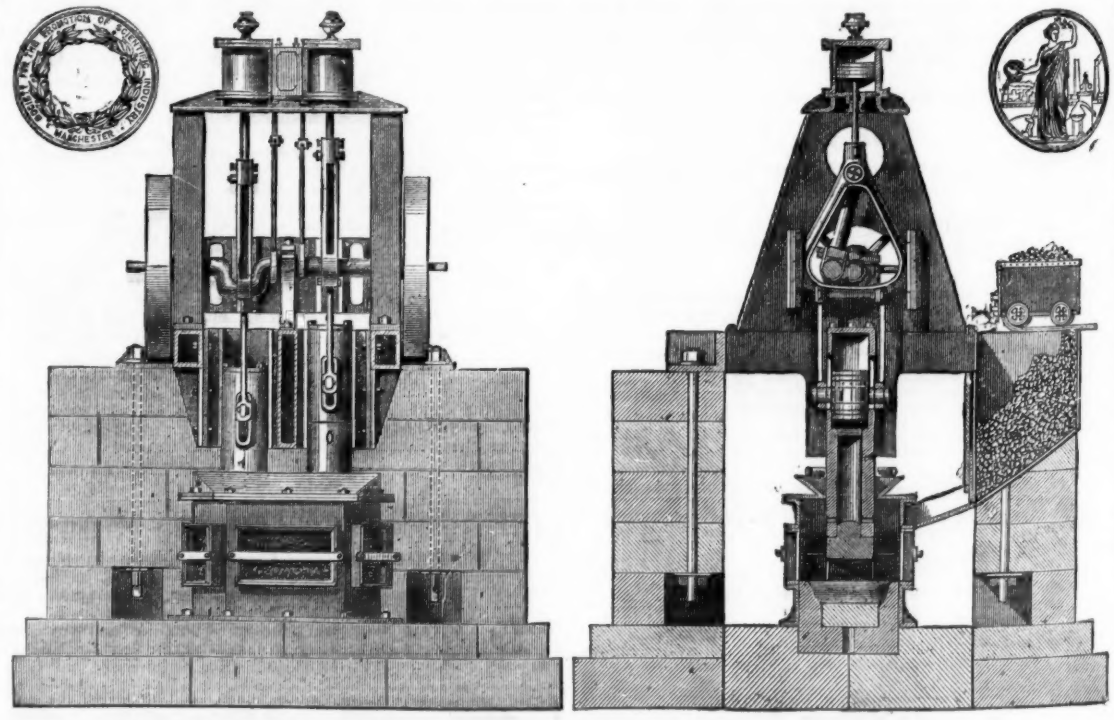
"The Work is replete on the subject of underground management."—M. BANEK Colliery Proprietor.

To be had on application at the MINING JOURNAL Office, 26, Fleet-street, London

---

MONEY LENT, at EIGHT, NINE, and TEN PER CENT., on FIRST MORTGAGE of FREEHOLDS for IMPROVEMENTS and STOCKING, said freeholds in the Province of MANITOBA.
Address, HERBERT C. JONES, Solicitor, 20, Masonic Hall, Toronto.

---



## SHOLL'S PATENT DIRECT-ACTING
# PNEUMATIC STAMPERS,

**For Pulverising Tin and Lead Ores, Gold Quartz, &c.,**

SOLE MAKERS FOR CORNWALL,

## N. HOLMAN AND SONS,

ST. JUST FOUNDRY, NEAR PENZANCE. CORNWALL.

ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, ALSO WITHOUT STUFFING BOXES OR GLANDS WHERE RUNNIMG GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM IF PREFERRED

**Also, SOLE MAKERS OF STEPHENS' PATENT PULVERISER.**

**MINING AND OTHER MACHINERY CONSTANTLY ON SALE,**

NEW AND SECOND-HAND.

# Original Correspondence.

## COLLIERY EXPLOSIONS—CAUSES AND PREVENTIONS.

Cause 1.—Pressure of the public for cheap coal.
Cause 2.—Pressure of the working men for higher wages.
Cause 3.—Pressure of the Union agitators on the working men.
Cause 4.—Pressure of the Coal Mines Regulation Act. An adequate amount of ventilation shall be constantly produced in every mine to dilute and render harmless noxious gases to such an extent that the working places of the shaft, levels, stables, and workings of such mine and the travelling roads to and from such working places shall be in fit state for working and passing therein safely.
Cause 5.—Pressure of a Certificated Manager, for a satisfactory return of profits to his employers, &c.
Cause 6.—Pressure of the Certificated Manager or his subordinates for more economy.

We shall the better understand the full definition of the science of chemistry if I first explain some of the terms which I am compelled to make use of. Of these terms the two most important for us clearly to understand are Matter and Form.

1.—Matter is the name which we give to all things which exist or which can in any way be recognised by our senses; thus, the earth we live on, the water we drink, the air we breathe, the bodies we dwell in are all material or, scientifically speaking, masses of matter.

Matter possesses various properties, but the essential ones (without which, in fact, it would not be matter) are that it must possess weight and occupy space.

The chemist then uses the term "atom" much as he uses that of element—not as an absolute fact, but as a convenient term to express what is observed to be the case according to our present knowledge.

Combining Volumes.—When bodies are capable of assuming the form of gas or vapour a very simple relation exists between the volumes or bulks of those gases or which combine together and the bulk of the gaseous compounds formed by their union. In Gaf. Tussac's Law of Volumes it is found that gases or vapours unite together by volume, either in proportion of equal bulks or in that of one volume to two volumes, or one to three volumes. Thus, equal volumes of hydrogen and chlorine unite together, and so on. Two volumes of hydrogen unite with one of oxygen to form water, and three volumes of hydrogen unite with one volume of nitrogen, &c.

Volume Weights.—This arises from the fact that if equal quantities or volumes of the elements in the state of gas or vapour be taken their weights will be found to be in the ratio of their atomic weights. Thus—

| | | | | |
|---|---|---|---|---|
| 44·4 | cubic in. of hydrogen | weigh ..... | 1 | grs. |
| 44·4 | „ oxygen | „ ..... | 16 | „ |
| 44·4 | „ nitrogen | „ ..... | 14 | „ |
| 44·4 | „ chlorine | „ ..... | 34·5 | „ |

In estimating the relation between the volume and weight of all gases and vapours, both simple and compound, reference must always be made to temperature and pressure to which they are subjected. Heat has the property of expanding all things, but gases and vapours expand very largely for any increase of temperature. It has also been found by accurate experiments that gases expand regularly for every increase of temperature, the rate of expansion being $\frac{1}{273}$ of their volume at zero or freezing point for every increase of 1° Centigrade.

| | | |
|---|---|---|
| 273 volumes or measures of air or gas at 0° C. | becomes | |
| 274 | „ | 1° C. „ |
| 275 | „ | 2° C. „ |
| 273 + × | „ | ×° C., &c. |

The fraction $\frac{1}{273}$ is represented by the decimal fraction 0·003665, &c.

| | | |
|---|---|---|
| 1 | volume of air or gas at 0° C. | becomes |
| 1·003665 | „ | 1° C. „ |
| 1·007330 | „ | 2° C. „ |
| 1·010995 | „ | 3° C., &c. |

The pressure in all cases remaining the same. But the volume which a given quantity of gas occupies at any temperature depends also on the pressure. If the pressure under which the gas exists be removed or lessened the gas will immediately increase in size or volume, and if the pressure be increased the volume of the gas will be diminished regularly. The law according to which this takes place was discovered by Boyle in England, and by Marriott on the Continent, independently of each other, and known as the law of Boyle and Marriott. It may thus be enunciated—the temperature remaining the same the volume which a gas occupies varies inversely as the pressure to which it is subjected, or the density of a gas is proportionate to its pressure. Thus—

| | | | |
|---|---|---|---|
| 1 volume or measure of air or gas under | 1 | pressure | will become |
| 2 | „ | „ | ½ „ |
| 3 | „ | „ | ⅓, &c. |

Again—

| | | | |
|---|---|---|---|
| 1 volume or measure of air or gas under | 1 | pressure | will become |
| ½ | „ | „ | 2 „ |
| ⅓ | „ | „ | 3, &c. |

Provided the temperature remains the same. If the temperature and the pressure both vary the volume of the gas will vary directly as the temperature and inversely as the pressure.

The standard temperature and pressure at which the volumes of gases and vapours are recorded are 32° F., and barometer at 30 in.; or, in French measure, 0° C., and barometer 760 mm. (= 29·9 English inches). If the volume of a given quantity of gas at other than the normal temperature and pressure be required the corrections for each must be made separately, as in the following examples:—

1.—100 cubic inches of a gas are taken at 15° C. What volume will they occupy if the temperature be raised 20° C.?

Now, since gases expand $\frac{1}{273}$ of their volume at 0° C. for each degree Centigrade.

∴ 273 vols. at 0° C. = 288 = (273 + 15) vols. at 15° C., and
273 vols. at 0° C. = 293 = (273 + 20) vols. at 20° C.

| Vols. at 15° C. | Vols. at 15° C. | Vols. at 20° C. | Vols. at 0° C. |
|---|---|---|---|
| ∴ 288 : | 100 :: | : | $x$ |

Here $x$ = 94·792 cubic in.

100 cubic in. of gas at 15° C. = 94·972 cubic in. at 0° C. Again—

| Vols. at 0° C. | Vols. at 0° C. | Vols. at 20° C. | Vols. at 20° C. |
|---|---|---|---|
| 273 : | 94·792 :: | 293 : | $x$ |

And $x$ = 101·7364 cubic in.—Answer.

You first reduce the given volume of the gas at the given temperature to its corresponding volume at 0° C., and then by means of the fraction $\frac{1}{273}$ you can find its volume at the required temperature.

2.—100 cubic in. of a gas are taken when the barometer stands at 31 in. What volume will it occupy if the barometer sinks to 28 in.?

The observed volume is taken at 31 in., while the required volume is taken at 28 in., and, as gases expand inversely as the pressure, the volume at 28 in. barometer = $\frac{31}{28}$ of vol. at 31 in. barometer.

$$\frac{31}{28} \text{ of } 100 = \frac{31}{7} \text{ of } 25 = \frac{775}{7} = 110{\cdot}714285 \text{ cubic in.}$$

This law of variation for temperature and pressure holds good for all gases and for atmospheric air, the modification necessary for vapours, and for condensable gases near their point of condensation.

If the above laws were more practically in use in a coal or any other mine they would prevent those great explosions, and the reason I think they are not carried out in a practical way is—take a shaft or pit 14 ft. diameter, giving an area of 153·775 ft.; then a main road from the bottom, 8 ft. square, at 880 yards from the the shaft. The Certificated Manager may direct a split of the 8 ft., with two 4 ft. airways. This may be economy on his part. He may get the same quantity through the two 4 ft., but the velocity will be increased, and will the pressure be in proportion? As gas explodes at a velocity of from 7 to 10 ft. per second will this not be a source of danger?

If the main intakes and return airways were made in proportion to the area of the shafts or pits they would fulfil the adequate requirements of the Coal Mines Regulation Act, and by making such roads would enable managers and subordinates to get rubbish to pack up the roof, and gob up the old working places—no room left in those old places for the accumulation of gas, &c., and would prevent many gob fires by the pressure being kept more regular, and would prevent many falls of roof. To carry this out the public ought to pay 1s. duty on each ton of coal raised from a coal mine beyond the price at the colliery. Then the working men and also the working subordinates would be a better paid class. When the Certificated Manager boasts that he has cleared from £—— to £—— for his employers the working subordinate has out of 50*l.* to 70*l.* annual income to pay house-rent, poor's rates, highway rates, and benefit club, and subject or liable to three month's imprisonment; and to support a wife and three to five children.

The public might have their own staff of men at each colliery to see the roads made and safely done. It might save a deal of travelling expenses, and the balance over the 1s. per ton duty go to the benefit of the aged, the lame, and the burnt collier, &c.

*Nov.* 18. —— Working Subordinate.

## IMPORTANT SEISMOLOGICAL OBSERVATIONS.

Scientific speculation has been of late somewhat exercised as to the origin of earthquake phenomena by the late troubles at Agram. Various theories have been propounded from time to time to account for earthquakes, all of which seem more or less feasible. The contraction of the earth's crust as its surface becomes gradually cooled by radiation into space, causing splits and fissures or crumpling, accompanied by sudden movements and vibrations. The existence of waves on the surface of the molten nucleus, supposed by some authors to constitute the centre of our globe, and which agitating the rocky crust may produce the effect of earthquakes. Local changes of temperature of the earth's surface, producing unequal expansion or contractions in the strata. The tension pressure and upheaval produced by vapours or gases suddenly generated beneath some impermeable strata, and lifting or rending the rocky crust with violent commotion. Electrical or magnetic influences, all these have been cited as possible causes of earthquakes.

Although, doubtless, any of the above causes may be productive of earthquake, and though the same phenomena may be, and probably frequently are attributable to one or other of these, or a combination of them, still many of the facts connected with earthquakes would seem to point to the probability that the most usual cause of seismic disturbances is the pressure of occluded gases or vapours upon some impermeable superincumbent strata. The fact that for the most part earthquakes occur in the neighbourhood of active or extinct volcanoes; that they are more frequent in the vicinity of large masses of water—such as seas or lakes—the water from which may easily percolate downwards through the strata, and be brought into contact with heated rocks below, accounts at the same time for the tendency which seemingly exists to eruptions of hot springs, geysers, and mud volcanoes in regions liable to be affected by earthquake.

Earthquake effects seem to be usually very much localised and circumscribed, expending almost all their force on small centres of action, and only being felt at any considerable distance by slight tremors and secondary vibrations transmitted from the main centres. All these facts would point to the probability that they must usually result from some local and comparatively superficial disturbance. No other theory, then, would seem more feasible than that of a local pressure of included gas to account for such localised action. If this be the case, and if the usual cause of an earthquake be in reality nothing more or less than the formation and bursting of what might popularly be described as an enormous bubble in the earth's crust, it is interesting to consider what influences other than those strictly terrestrial might determine the incidence of an earthquake shock. Among these, doubtless, atmospheric pressure would be of first consequence. Any sudden alleviation of atmospheric pressure has been pretty fairly proved to be a most active determining cause of the evolution of fire-damp in coal mines, and a little consideration will show that it may also be an active cause of earthquake. Suppose a generation of gas or vapour beneath some impermeable strata covering an area of 100 miles square. A fall of only 1 in. of the barometer may easily in the course of an hour remove about 20,070,000,000,000 lbs.—say, eight hundred and ninety thousand millions of tons of pressure from this surface, or eight hundred and ninety thousand tons per square mile. Under these circumstances it may be admissible that the rocky covering beneath which the compressed gases might be confined might have an irresistible tendency to rise, and that the rocky bubble so formed might crack and suddenly burst, emptying itself at any weak point, either on the surface or sideways into the contiguous strata, when by a rapid collapse and subsidence the ground would be violently shaken. This theory has long struck the writer as very possible, and he has been led to conclude as to its probability by numerous observations in a district in the Pyrenees, frequently visited by earthquake perturbations of more or less intensity. As during the whole of his residence, extending over more than 15 years in that country, he kept a regular meteorological register he was enabled to observe that in almost all—probably in every case—earthquake shocks were accompanied by rapid oscillations of the barometer. In one rather smart shock, which occurred about June, 1866, the barometer, which had been falling slowly during the day, fell suddenly over 2 centimetres in half-an-hour, rising again shortly after the shock. The late rapid movements of the barometer may then, he considers, be fairly suspected of being accountable for the destruction of life and property at Agram.—*Putney, Nov.* 24. —— F. Maxwell Lyte.

## ON COKE MAKING—No. IV.

Sir,—As was stated in the article in last week's Journal the Coppée system of coking is adopted to a large extent in Belgium. France, Austria, and Germany, about 4000 ovens being in operation in those countries. In this country it has not to any extent superseded the Bechive method of coking. Not more than 380 Coppée ovens are in operation in England, and these are chiefly erected at two ironworks in South Wales, and at the Barrow Hematite Company's Works. In Durham—the principal seat of coke manufacture—the Coppée system has not as yet been tested, at least not further than a mere trial, and whether the more rapid manner of producing the coke and the watering of it outside the oven would produce as good results as with the ordinary oven, is a question yet to be determined. The experience of many years use of the Coppée ovens on the Continent goes to prove that 10 per cent. greater yield of coke is obtained, and twice the quantity of coke is made per oven than with the Beehive method. The question of comparative quality has not, perhaps, been put to the test sufficiently to enable us to say which of the two systems is the best in this respect.

The oven patented by Breckon and Dixon was at one period adopted almost exclusively at Messrs. Pease's coking collieries in Durham, and also at a few other collieries. This oven was the Beehive, with flues underneath. The object was to produce the coke more rapidly, and obtain a better yield. There are 10 flues under each oven; the gases from the burning coal are made to pass down a flue at each side of the oven, from thence circulating out of each flue through five of the bottom flues, afterwards passing to the main flue. The coke is watered in the interior; the process of coking goes on upwards as well as downwards; a line of division in the coke marks where the burning meets. The yield of coke is said to be greater than in the ordinary oven, but the strength of coke, so desirable for blast-furnace purposes, is not obtained.

Other systems of coking have been adopted on the Continent, a trial of some of these having been made in England, but the result has been unsatisfactory. A principal object of one at least of these systems has been the utilisation of what are wasted in the ordinary ovens—the ammonia and tar. A French system of coking of this nature was tested practically on a large scale at South Brancepeth Colliery a few years ago: 36 ovens were erected of various sizes, principally round; the size of 11 ft. was found to give the best result. The gases escaped through the dome of the oven by a metal pipe, thence through a range of pipes to condensers. The latter consisted of two clusters of pipes, 15 in each, each pipe being 40 feet in length, 1¾ ft. in diameter; also a column at one end filled with coke. Below these two condensers were four tar wells 14 ft. 7 in. in length, 10 ft. in width, and 12 ft. in depth. The gases, after issuing through the dome of the ovens and circulating through the pipes and condensers, were brought by other pipes to a flue built underneath each oven, burnt over a grate, the heat being distributed to the flues underneath. The oven was constructed so that the coal burnt upwards, the heat being applied underneath, and the top kept comparatively cool by raising the dome. The yield of coke over a period of twelve months was 68 per cent. The products obtained were from 100 tons of coal:—Coke, 68 per cent.; tar, 2·40; ammoniacal water, 5·2=75·6 per cent. Besides this there was refuse coke, which was burnt in the grates under the floors, about 3½ per cent. more, making 79·1 per cent., the remainder being the gases burnt over the grate and in the flues. The cost of making coke on this system was nearly alike to the ordinary one. The method of charging and drawing was the same; some extra expense was incurred in closing the doors and attending to the grates. The coal was burnt three and four days as usual.

After this system had been tried for two years it was given up; the coke was inferior in quality, weak, and black at the ends to a degree that rendered it unsaleable in the market. The flue walls were built of gannister bricks; the intense heat caused these to give way and close up to such a degree that they had to be thoroughly repaired once in four months.

The Wigan Iron and Coal Company had 120 of the same kind of ovens built, combined with appliances for collecting ammonia and for making coal oil. The method adopted there was to use pumps to draw off gas from the ovens, and force it through the condensers. Part of the gas was used for lighting the place, the remainder going to heat the floor of the ovens. About 60 per cent. of coke was obtained at these works from the coal.

Another form of oven, known as the Appolt oven, has been tried in Durham. These ovens have false bottoms, which fall when the process of coking is completed, and the coke is let down into iron wagons placed beneath. The peculiarities of these ovens is their great height. In a block of 18 ovens each was 16 ft. in height, 4 ft. by 1½ ft. in section at the bottom, tapering slightly to the top. There are apertures in the sides of the ovens through which the gases escape into flues at the sides, intense heat is produced, and the process of coking is completed in 24 hours. The coke is watered on the outside; thus an excess of moisture was found in it. Breeze or small coke was placed on the iron bottoms before charging with coal, to protect them from the heat. The coke produced by this system was said to be hard but black in appearance. The repairing of the flues would be another objection to it. M. E.

## THE FUTURE OF COAL MINING IN YORKSHIRE, DERBYSHIRE, AND NOTTINGHAMSHIRE.

Sir,—Permit me, on approaching a subject replete with the most vital importance to the existence of thousands of our fellow-beings, and the safeguard of millions of capital, in lieu of a prolix exordium, to crave reference to my letters entitled London and Paris Coal Supply in your last and preceding Journal. I shall endeavour to dispose (co-ordonner) the outcome of deep thought and practical research in as succinct and intelligible a form as practicable, the question at issue being withal one of plain common sense. Confronted as we are in precited districts with an extraordinary emergency, undermining with impunity the very foundations and subverting the edifice of society, which may truly be said to be brought to the verge of primeval barbarous feudalism, to restore an equilibrium, society assailed in its vital parts to an infinitely greater degree than what has been unveiled of Irish landlordism by the Land League, resource must be had to measures which may successfully restore the supremacy of justice and reign of civilisation at present and for a lengthened period disembowelled of their fundamental principles. Remedial measures, wherever there may exist evils, are by no means matters of subordinate importance. To master the subject I have spent day after day in familiar intercourse with the miners, individually and in groups, in their abodes, in their midst, and speak from actual experience, which I may have occasion to particularise in the sequel, should I not too far encroach upon your valuable space. Their condition intrinsically is incomparably more deserving of sympathy than that of the down-trodden Irish, compared with whom the Russian serf was a prince. There exists a striking analogy between the Irish tenant farmer and cultivator of the soil, and the coal miner. The former by redeeming bog and heath land has his rent raised with the progress of every improvement. The inland miner, consequent upon every amelioration of the seaborne coal transit from the North of England, closing the London market to the high rate of railway conveyance of inland coal, is under the perpetual thraldom of not merely a reduction of his hard-earned miserable wages, but of suspension to the extent of a moiety of the work, and in numerous instances total cessation of employment, so that the pit phraseology "Play" for the breadwinner and his family is no longer endurable.

This month's return of the Coal Exchange shows a continuous decrease of railway borne coal to the Metropolis to the almost incredible extent of 382,133 tons, with a corresponding increase of seaborne from the Tyne, &c., to the extent of 87,027 tons, causing the largest circulating metropolitan daily journal to communicate to their readers the following deplorable report:—"The coalowners of the inland districts, not being able to compete with sea transport (of which they are hitherto debarred), are closing their pits," and this at a season commanding the very highest prices. The outside public will naturally enquire the reason of the inland coal owners not combining to create a *matériel* of steamers, barges, &c., to outvie, by reason of a much shorter sea distance, a vastly better and safer navigation, a much improved system of dispatch and transport.

The Durham and Northumberland coal owners and railway shareholders have, according to the last general report of the Board of Trade, p. 4, received less dividends than for any year since 1873, and those of the Great Northern who have received such a miserable pittance will do well to have recourse to paper and pencil, and practical experience, self-acquired or borrowed, whereby they can assure themselves that the Great Northern and Midland, through my system, will derive a much larger net revenue than by taking the coal to King's Cross and St. Pancras. I have quite recently spent a considerable period in the aforesaid colliery districts, and deplore the miner's want of security from the constant torture and menace which he feels hanging over him of his income being reduced to and maintained at starvation point. It is the perpetration of the most flagrant injustice to reduce the wages of the miners to what exists, when it can be proved that the coal owners have it in their power to deliver their output to consumers' premises in London at an immense saving upon rail and Tyne transport by the adoption of my proposed system, exhaustively developed in the Journal, and which has been commented upon by same and contemporaries as thoroughly feasible, and the only rescue of the Yorkshire, Derbyshire, and Notts coal output. The miners demand the overthrow of a system under which there is no adequate reward for their labour, and no security for the homes of their families. When writing this my morning paper is delivered, stating "this morning 170 miners' families are being evicted from their houses, turned out with the ground covered with several inches of snow continuing to fall fast."

When a considerable portion of a large district, in this instance the entire mining population, demand the earnest consideration and attention not of statemen and monarchs, through the direct instrumentality of whom an eminent Cabinet Minister stated within the last week almost all the great crimes of history have been committed, and all the direst calamities in history have been brought upon mankind, but of the more sympathetic public, in consonance with his further dictum, "I would rather have the judgment of an intelligent and moral people enforced as to their interests and duty."

The evidence of the oldest and most experienced railway general manager, now the presiding genius at the Midland board, before a Royal Commission, shows from his answer to question 5331 that he was at one period a large owner of screw colliers from the Tyne to London, and considered a lower than the existing rate a very fair price, which he was willing to accept. Now it can be proven, without the least difficulty, that screw colliers from the Tyne to London can be worked more economically now than at the period this evidence was given. It is, therefore, no intricate problem to solve that if the high railway transport is displaced by the chief sea transport at pre-

sent existing rates, what must be the consequence if still more reduced in consonance with Mr. Allport's evidence, the Chairman of the London and North-Western and Great Eastern, the general manager of the Great Northern, and numerous governmental and other official reports testify to the total inability of railway competing with sea transport of coal.

I am perfectly justified in submitting a thoroughly matured practical scheme by which the coal owners will be put in possession of a remunerative return on their invested capital to the extent of 10 per cent., banker's intermissions liquidated, and perfect security imparted to future enlarged transactions, the miners assured double their aggregate weekly wages, with constant employment, the general trade of the colliery districts greatly increased, and placed on a safe footing, the Midland and Great Northern, and M. S. and L. Railway placed in a far greater net receipt by the conveyance of coal to the sea board for shipment to London than for their entire net receipt from the existing London coal transit, the L. and Y. and the North Eastern placed in a much larger net receipt than from the entirety of their coal traffic to the Umber, and finally, coal consumers in the Metropolis supplied with much cheaper, better quality, and category of coal. The cost of bringing the coal to bank, including royalty, is perfectly well known, and an average or mean output cost can be struck with a little application.

A sea transport *matériel*, as exhaustively developed in a series of letters in the Journal, enabling Yorkshire, Derbyshire, and Notts to effect a saving of several shillings a ton on railway and Tyne transit, with attendant expenses to metropolitan consumers' premises, will be easily acquired. The miners have it in their power, by a combined movement, to enable my scheme to be carried out under the administration of men whose position and influence will command any amount of confidence and capital. An end will be put to strikes, imparting a confidence and security to the investment of capital, and I am in a position to prove that, by the powerful combination now proposed, measures will be adopted giving to the association a perfect monopoly of the entire coal mining of the kingdom. It is, therefore, self-evident that the moment has arrived for the collective body to adopt measure which are fully matured to take the entire working of the coal mines into their own hands, which is easy of accomplishment. Their co-operation is earnestly solicited, and should it enter into the views of the few coal owners with an assured *clientelle* to oppose this general movement directly or indirectly, consequent upon any advantage they possess over their neighbours, I dare inform them that it will end in their ruin. I adjure bankers and others who have large amounts outstanding againt coal lessees to give one their energetic support as the only means of reeovering their advances. I enter upon this campaign with a full conviction of successfully carrying out what I propose to the immense durable benefit of the coal owner as well as the miner. With your indulgence I shall continue the subject in next week's Journal.—*Ramsgate, Nov.* 22. W. J. THOMPSON.

## PRACTICAL EDUCATION FOR MINERS—No. III.

SIR,—In the education of the miner great stress has to be laid on the fact that he is a working man, and earning his living, or learning to do so, consequently he has but little time to devote to outside study; therefore his studies, or rather the subject of his studies, should be apportioned to the time at his disposal, and should be conducted in such a manner as to give him in the shortest time the greatest possible amount of general information on the subjects most required, and such as are especially applicable and necessary to the successful carrying out of mining operations. In a former letter I named the subjects which are necessary for a mine manager to have a knowledge of, which I need not again enumerate here. There are also other topics which a knowledge of would do him no harm, but as they are of secondary importance I do not include them as necessaries; and anyone having a knowledge of those mentioned can quickly acquire sufficient acquaintance with the others to meet all his requirements. It is hardly to be supposed that any miner can in his leisure hours during youth acquire a thorough technical and theoretical knowledge of all those subjects; but he may acquire a practical knowledge of them sufficient for all the exigencies of mining, and when he has this, and practices the application, the theoretical suggests itself to any thinking man, or he may easily acquire it by reading, &c., at which time he is in a position to appreciate its intricacies, follow up its teachings, and apply its rules to test the thoroughness of his practical knowledge. I have no doubt but some will say this is reasoning wrong side first, and boys are sent to school before they are sent to work; but I ask are not boys sent to school to work? Are they not taught the practical application of any rule—say, in arithmetic—before there is any such thing hinted to them as a theoretical application or analysis of those rules? And is not a good grounding of arithmetical rules necessary before entering on the study of algebraic theories? The answer to these questions can only be in the affirmative, then my theory for the practical education of the miner is based on a right foundation.

I may not be able by my own humble and unaided efforts to sufficiently explain and elaborate this system, to cause it to be immediately adopted; but as union is strength, so the united efforts of a few might work wonders even in this matter. And in my opinion the reason why the Miners' Association of Cornwall has not secured the object for which it was started—the education of miners—is immediately due to its having been started on a theoretical and technical instead of a practical basis. That some have benefited by its efforts no one can gainsay. And there are two questions to be asked on this result—1. Are they better miners for the education the Association has given them? Unfortunately the answer in a practical sense can only be, No.—2. Are they better men for this education? Certainly they are. Then why have the Association failed in securing its object? Because although it has made better men of the few who have availed themselves of its teaching, it has not in any way made better miners, which was the intended object of its founders. The formation of classes in each mining centre or district, with a regular or occasional teacher, is the only available method which can very well be adopted to reach the miner; but the system of education or mode of study may vary a great deal, and its success or usefulness must always depend on the amount of general information which the miner or student can acquire in a given time. Of course, personal ability will find its own level here as in all other studies. Let anyone visit a Chinese theatre, listen to a French play, or attend a Latin lecture, when they know nothing of either of these languages, and although he may observe many sublime and ludicrous situations in either, he can form no idea of the subject of what he has been listening to, and he will not derive much benefit therefrom because he cannot gather the separate fragments of his so acquired knowledge into a whole. So with miners, although they may have had what is considered a good education at a country school, they are not in a position to at once understand the meaning and application of the technical phrases and theoretical explanations of matters as presented to them; they have first to learn, as it were, a new language, but teach them in a language they can understand and they can follow it from the first, and can readily understand its application.

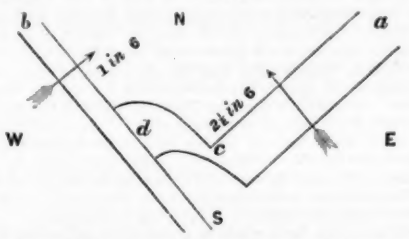
The classes in the several districts should be formed on a fraternal and interchangeable system, and the students of the Association should have free right of entry in any class belonging to the Association, and the examinations should be conducted solely under the auspices of, and certificates of competency, &c., should be granted by, the Association to those students who successfully pass the examinations without any interference of the Science and Art Department; and I am sure the mine managers and mine agents and other interested in the welfare of Cornish miners, as also those who desire a better class of mine managers than are generally to be met with at the present time, would give every assistance possible to a scheme founded on a thorough practical basis, and it would moreover tend to bring to its classes those who at the present time are bashful at facing its theories and technicalities.

The first object of the Association should be to secure to its students a thorough knowledge of practical mining as far as it can be obtained, and for this purpose I advocate the fraternal or interchangeable system of classes, so that the miner may be removed from his own to other districts where there is a difference in the mode of working as compared with that carried out in his own district. The mode of working is something similar in all hard ground mines, yet there is sufficient difference in the details of working large and small lodes, as also from other local causes, that it would be interesting and very useful to the aspirant for mining honours to have some knowledge of these different details, and then again loose or soft ground mines where timber is absolutely necessary to the opening up of any portion of the mine, the mode of working is entirely different from that of hard ground mines; and I consider that if the Association were to do no more than see that its students acquired a knowledge of the different modes of working, in sinking shafts, driving levels, stoping the different lodes under the various circumstances as they occur in hard and fair ground, &c., it would have accomplished a great deal in giving to the country a better class of miners and a better class of men as a groundwork for the making of a better class of managers. The groundwork of a miner's education having thus been secured, or rather the means of acquring it having been established, the next important step would be to provide the means and mode of acquiring a knowledge of the several subjects which are necessary to a mine manager for the successful carrying out of his various duties.

GOLD NOT GILT.

## SLIDES AND HEAVES.

SIR,—In a mine there are two tin lodes, *a* and *b*, crossing each other at about right angles; country rock killas; *b* is a hard, poor, and unprofitable lode, and underlies N.E. about 1 in 6; *a* is a large and very productive lode, underlying N.W. about 2½ in 6, and being




worked from the N.E. On working up to the point *c* the lode made a sudden turn northwards, where it contracted, and opened out again on its junction with the lode *b*, as shown in the sketch, and on driving through lode at *d* the agent found he had lost the lode *a*. The ground being so hard, and lode *b* so poor, and likely to continue so, that the agent is unwilling to risk his reputation and situation in undertaking to drive to find lode *a* without obtaining the advice of some expert on the matter. Can any of your readers who are well versed in the theory and practice of slides and heaves phenomena come forward and help this agent over his difficulty, so that he may start to drive after the lode in confidence. GOLD NOT GILT.

## THEORY AND PRACTICE—ANOTHER PROBLEM.

SIR,—It would appear from the expressions of numerous correspondents in the columns of the *Mining Journal*, especially of late, that knowledge unless acquired in a particular way, or in a stereotyped fashion, is of little or no value. I know of no industry but that of mining in respect of which practical knowledge and skill are sought to be derided and ignored. It appears to be largely assumed that the practical mine manager as contradistinguished from the scholastically educated aspirant is unquestionably an illiterate compound, a principle constituent of which is impudence, and that only in darker times intellectually and scientifically could he have ever attained and maintained his present position, and some who flatter themselves on having passed the curriculum of school taught mining have even gone so far as to affirm that this hybrid—so-called practical—will soon become a thing of the past, and on the score of ignorance before I proceed any further I take the liberty of stating that I have not yet discovered any very pronounced marks of superiority in any of those pretenders' writings, and certainly nothing of practical or scientific value to commend them or their tenets to one's esteem or notice. It may be objected that I am not an impartial witness; that I belong to what is termed the practical class, which I will not deny, but meet by an affirmation that I am without prejudice, and also that I respect theory and science in all their bearings and adjuncts in the domain of mining. It is an ill-judged position to assume that theory and practice are incompatible; the truth is they are inseparably connected in the minds and experience of all genuinely practical operators. If theory were divorced from practice many, if not most, of the operations of mining would be denuded of their objects, and in those cases where objects are tangible and occularly demonstrable they would, without theory, be duded of that which principally interests the responsible director and experimental results by shrouding in darkness that which would have been otherwise illumined with a living and sustaining light, for such is the practical miner's hope and greatest incentive. On the other hand, theory without practice (that is to say, without an experimental knowledge of the steps by which it hopes to accomplish its purpose) is a mere, idle, self-consuming indulgence of the imagination—a despoiler of the intellect.

But the theory which pertains to mining cannot be long persisted in without practice. The imagination soon tires of dwelling long on an unfruitful theme. Even those whose minds are constituted almost exclusively imaginative require a frequent change of objects as incentives to their discursive fugitive wanderings. I speak now of a theory of mining formulated without an experimental knowledge of its outlines, physical features, mechanical requirements. But the theorist, I presume, that pits himself against the practical mine manager is the scholastically educated aspirant, who arrogates to himself and his class exclusive possession of technical acquirements. Whereas many of the former class know as much, and probably more, of the technicalities of mining as do the latter, combined with a maturity of understanding and correctness of judgment in their application which the inexperienced are wholly devoid of.

It is much easier for an intelligent practical miner to acquire the necessary technical knowledge than it is for the most accomplished scholastically educated aspirant to acquire the practical knowledge and skill requisite to direct and control the multifarious operations of mining, and to deport himself so as to command the respect of large numbers, or indeed any number, of skilled, experienced, and intelligent workmen, who never fail to respect and esteem masters in proportion to their abilities, or otherwise to exhibit it, and maintain headship and authority from the highest of all ground—a commanding, comprehensive, practically minute, and intricate intelligence and acumen.

If theory merged in practice, or practice in theory, a discussion might profitably ensue as to which was paramount; but when one is invariably the harbinger of the other their companionship and offices must be admitted inseparable and indispensable. To be without a theory in mining appears to me to be just the same as to be without an object; and, as most of the objects in respect of mining are as much prospective as acquired, they are inducible to reason and realisable to sense. Who can contemplate the venous and arterial structure of the rock system of our world, with all the phenomena incident to the operation of laws, and view the vicissitudes which have unquestionably occurred through these, to us, incomprehensible agencies, and affirm that theory is a useless endeavour, an abortive proceeding? As well attempt to disunite cause and effect as to dissever theory and practice in the pursuit of such a speculative industry as mining. The relation in which they stand to each other is a variable and not a fixed condition. In incipient mining, or as a preliminary thereto, theory succeeds observation, and precedes practice. In more advanced stages it succeeds one line or lines of action, and precedes another or others, according as disclosures of new facts and circumstances may have developed themselves during the progressive stages of advancing operations.

I know of no period of progressive mining or stage in its advancement that theory can be conveniently dispensed with, unless it should be in those cases where darkness is preferable to light, it may then be politic to shroud the prophetic vision and conceal from mental view an unwelcome and undesirable event, dimly but impressively adumbrated and evidenced in unmistakable characters that in the light in which they are revealed could not be misinterpreted.

Opinions are founded on theory, whether by the practically experienced or the technically educated miner, the difference being that the one is guided by the light of knowledge, the other by speculative propositions, and an equally speculative experiment application of them, guided by no personal knowledge as a criterion which could give to his speculations anything clearer or better than a doubtful consummation and a haphazard destiny.

*Llanrwst Lead Mine, Nov.* 23. ROBERT KNAPP.

## THE EMMA SILVER MINE.

SIR,—I have seen some references to the past history of this mine in the Journal of Oct. 23, and cordially endorse the views of the writer in reference to exploring mines. Had this mine been worked from the first in accordance with the rules adopted in all well conducted mines in England the company would never have collapsed in the short time that it did. Every effort was made to extract ore from the mine as speedily as possible, to make a "big showing" and influence the price of shares; but no tutwork or development was carried on until the large bunch of ore was extracted, and then only a winze was sunk for a few fathoms. There is no mine in the world that would not be brought to a standstill by such a system as this. With such a vein as that owned by the Emma Company there was every encouragement for exploring it, and finding other deposits of ore. For some time past the mine has been developed by private enterprise, and it is now reported that ore is again being met with in the vein. There is ample scope for making further discoveries in depth, and notwithstanding all the theories which have been propounded practical miners in the district are quite confident that favourable results will ensue from the work now being done. The mineral belt in which the Emma is situated extends in an unbroken line through the hill, and on this line to the west are situated the Cincinnati, North Star, South Star, Titus, Vallejo, Flagstaff, Naboh and Eclipse—all of which mines have on exploration developed chambers of ore between the north wall and south wall of the belt or mineral channel—the ore sometimes making on the north wall, sometimes on the south wall, and sometimes midway between both. These mines have shipped at least twelve million dollars worth of ore, and are likely to continue producing so long as they are fairly developed, as there is no prospect of running out of this belt in depth.

I see no reason to doubt that the Emma Mine will not answer the expectation that it will develope similar results to the other mines in the belt when opened up. Some few years since the Vallejo Mine was abandoned, the ore channel having been worked out, and the vein, as it was thought, become worthless. The light gained by the development of the Flagstaff Mine in depth and laterally in the mineral belt induced some capitalists to acquire the Vallejo, and after a very limited exploration they struck another ore chamber, and are now shipping large quantities of ore, and making thousands of dollars of profit monthly. Why, then, should not the Emma Mine be expected to develope riches in depth? The opinion of mining authorities in this district is that it will do so. I hope it may, and give the shareholders a fair return for their original investment.

*Salt Lake City, Utah, Nov.* 10. WASATCH.

## GOLD IN INDIA.

SIR,—With your permission I should like to ask a few questions and make a few remarks upon the above subject, but not referring to the part of India we have heard so much about lately. To begin at the beginning, some years since I was in Ceylon (I was only a youth then in my teens), and in moving about from place to place remember being struck with the appearance of what seemed to me to be gold intermixed with the earth or clay that some natives had water-pots and cookery utensils made of; it was not there by design, as in one village I noticed nearly all the earthenware goods showed the same phenomenon. I often used to wonder if it was gold, and if so whether or not could it be separated from the earthy matter. I never heard of anything of the kind going on, and not then taking an interest in mining did not enquire upon the subject; but now, as I have an interest in mining, and reading the *Mining Journal* regularly, have felt much interested in the doings of the many new gold companies now being started in India. I wish to know if gold is found in a visible state? I do not remember noticing this gold spangled appearance in the clay before being burnt, though it might have been there all the same; the appearance was as if a pepper-box containing gold dust had been used to sprinkle thickly the particles of bright metal all over the objects named. The hills and rocks there are (according to what I have read about Southern India) very much the same as described lately in an Indian gold mine report—that is, granite of a close, fine, and deep blue colour.

Perhaps, Sir, you or some of your numerous readers could give me an idea of what this bright sparkling substance was? If not gold, what then? and if gold, where did it come from—from lodes or veins somewhere further up country, and, I presume, brought down by the action of water ages ago? Do you know, Sir, of any reports of gold being found in the island? precious stones are, and there is the pearl fishing on the coast. I should be glad of some information, for if gold is there in paying quantities I think mines could be better opened out than in India proper, for several reasons—there is a railway, and numerous good roads, and in several parts good rivers, and plenty of water everywhere, and the island is a coaling station, and in a direct line of all the mail steamers, about 28 days from Southampton. I believe some of the finest coffee in the world is grown there, and where the coffee grows best so do Europeans, except at some places up in the mountains, and there they (Europeans) do better still—grow potatoes and other garden produce from English seed, and sit by a good fire at night to keep comfortable at some seasons of the year.—*Oldham, Nov.* 22. KING OF KANDY.

## GOLD MINING IN THE DUTCH WEST INDIES.

SIR,—"A Late Resident in the Colony" has altered his mind. In his letter of Oct. 19 he said he would postpone all further correspondence on the subject, while in your issue of the 13th inst. a letter bearing date of the 2nd inst. has been published, in which he again occupies the attention of your subscribers on the very same subject. I think he has done a very poor service to his cause by thus returning again to the field after having abandoned it. *Faute de combattants.* I would have had to keep my peace, while now he has procured to me again the occasion of proving the untruth and unexactness of his statements. His personal attacks being unworthy of my notice I pass in silence.

"A Late Resident in the Colony" must have a very bad memory, or does not give himself the trouble to read the communications contained in your valuable journal regarding the Aruba mining companies. Otherwise I cannot explain to myself how he dares to sustain still "that the Aruba Island Gold Mining Company is simply engaged in converting its bonds into shares, and is making no application, still less holding out any inducement to the public." I for one do not think that the secretary of the Aruba Gold Mining Company, although he may have sent the last communication of "A Late Resident" to this Journal, is my opponent, for (1) he has never been a resident of the colony, and (2) he would not have forgotten that the chairman of his company uttered the following words in the general meeting held on Monday, Aug. 30: "but I for one shall welcome a little new blood into the enterprise, and hope to find some of the largest investors in gold mines taking a few shares in the Agency Company." (*Vide Mining Journal*, Sept. 4, page 1020.)

In regard to the question about the Aruba phosphate, "this new source of income to the company," as the Chairman was pleased to call it, but in which words "A Late Resident in the Colony" does not like to see an inducement held out to the public, my opponent now says that "no decision of the Dutch High Court is possible, because no litigation is possible as to the right of the alleged agricultural grantees to the Aruba phosphate in the grounds they claim." I can assure "A Late Resident" that some of the most eminent lawyers at the High Court not only think a litigation possible, but have even advised my party to begin same without delay, as the result can in no way be doubtful no person or company having any right

to take away any substance from the grounds once granted but metals, and that phosphate is no metal even "A Late Resident" will have to acknowledge. Now, it may be that the Government has committed the fault to find itself "not to give further grants of any kind on the phosphate grounds." But of what use will this stipulation be to the concessionaire when the High Court decides that he has no right to take away any substance from the grounds which have been granted? With such a decision the contract between the Government and the concessionaire will be annulled by itself, and if it were not so, I may ask, and this is the question, What source of income will the phosphate be to the company if it is not worked by the concessionaire?—*The Hague, Nov.* 16. A. M. CHUMACEIRO AZ.

THE PHOSPHATE DEPOSITS IN THE WEST INDIES—No. I.

SIR,—I venture to send you an account of my journey and inspection of the phosphate deposits in the Carribean Sea, which I hope will be interesting to many of your readers.

I had only just returned from Estramadura, in Spain, when I received instructions to proceed, *via* R.M.S.P. Company, Plymouth, to St. Thomas, W.I., where a schooner was to be ready to take me to the Caymans Island and others, but on my arrival I found no schooner, and so proceeded by the Royal Mail to Jamaica, where I chartered a small schooner and crew to take me my round to the various islands, or as they are called in the West Indies "cays." After a stay of a week at Messrs. Farebrother and Grant's Hotel at Kingston, Jamaica, my schooner was ready to start, being provisioned for two months, and glad was I to get away from the heat and smells of the town of Kingston into that glorious smooth sea, the Carribean. Through Port Royal we sailed, passing the fort and Her Majesty's grand old ship the Aboukir, and several gunboats, which I dipped my flag to, receiving a return salute. We landed in about 10 hours for the night at the Pedro Cays (S.W. Cay), upon which I found a Mr. Walter in charge, and then loading phosphate on the ship Hipparchus, of 1500 tons, with 25 niggers, for Liverpool. This small island is leased by the English Government at 100*l.* a-year to a merchant in Jamaica. The phosphate is very poor, with too much carbonate of lime in it. The average not being over 56 per cent., with 10 per cent. of carbonate; although the chemist on the island, Mr. Nevins, informed me samples ran as high as 65 per cent. of phosphate. Having seen all I required we put out to sea, and in two days landed upon the Cay or Island of Seranilla, which is a beacon cay, and is about half-a-mile long and a quarter wide, long 79° 53½', lat. 16° 49'; shape, half moon, or convex, to the south; strata sand and coral, growing samphire grass. The cay is 9 ft. only above the level of the sea, and the beacon, built of stone, is 20 ft. high and 8 ft. wide. The anchorage is good, from 10 to 17 fms. in the bay. There is very good drinking water on the island, in a well 6 ft. deep dug by the niggers; coker-nut trees grow on the island. The current is strong, N.W. by W., running about half-a-mile to one mile an hour. The phosphate deposit here is not very large, and runs about 2 in. to 1 ft. deep in pockets; the average quality is 45 to 50 per cent., with 20 per cent. of carbonate of lime.

We now proceed in a boat to Beacon's Cay Saranilla. This cay is very like the other, about 15 ft. above the level of the sea, and is covered with a short sort of wild parsley grass and green herbs. There are lots of turtle come on shore here at the end of the island, where there are very large coral stones. All over this island there is guano and phosphate mixed with white sand—a carbonate of lime. In consequence of the heat men can only work here after 3 P.M. and before 10·30 A.M. The island is flat, with hundreds of "booby" and fishing birds always resting upon it, and any quantity of sea fish in the bay. There are thousands of tons of guano here, and I have no doubt in time this island will be of great value, but at present there is too much sand or carbonate which is blown by the great winds from the beach on to the cay, and deposits. At the S.E. end of this island, within a quarter of a mile of the shore, there is good anchorage in 6 fms., this will be the place to build a pier, and send the guano in lighters from the Cay to the ships. After the men had collected some turtle eggs, and lots of birds shot, we proceeded out to sea for the Island of Serrana (North Cay), which we landed upon after 48 hours terrible knocking about in our schooner. This island is situated in long. 80° 12', lat. 14° 28', and is about three-quarters of a mile long and about three chains wide. The base of the island is carboniferous limestone and coral sand, covered with juniper bushes, wild parsley, and cowslip grass. There are two fishermen's huts on the island, a small pond, and lots of timber washed up by the sea on to the beach. On the S.W. side vessels can anchor in 5 fms., but a pier and lighters will be required to load the phosphate, with a windlass and ropes. There are lots of booby and man-of-war birds, with swarms of fish and turtle. The drinking water is bad. The phosphate requires sifting and separating from the coral stones, it is poor, but in quantity averaging from 6 in. to 2 ft. deep, laying in pockets amongst the rocks. From 20 analyses I found the average percentage, phosphate of lime 59 per cent., and carbonate of lime 18 per cent. I believe if the owners of this island, Messrs. J. Thomson, F. Bonar, and Co., of London, would plant it with koker-nut trees, it would pay well. One koker-nut tree in a year will yield at least 100 nuts, which are worth in America 16s. 8d. per 100. A tree must be about eight years old before it bears fruit, and costs about 6d. a year looking after.

Several cargoes of phosphate have been shipped from this island to America, probably over 2000 tons.

It being nearly dark we pulled up our anchor and sailed for the great Booby Island and deposits, leaving the Roncador Island and Grey Town behind us, which I will describe next week.

*Great Hill, Nov.* 24. R. G. S.

THE MINERAL RESOURCES OF WEST VIRGINIA.

SIR,—I have just had the pleasure of reading a short article on the Mineral Resources of West Virginia in last week's Journal. Having myself last spring visited West Virginia as Geological Expert for a foreign company, I cannot help feeling a lively interest in a part of the United States which I consider to be a country of very great future. My attention was particularly directed to the valley of the Great Kanawha River, and more especially so to a part of Fayette County, known as the Loup Creek Tract. The iron deposits there cannot be pronounced very important, although I am aware that some people hold a different opinion. They consist mostly of a black shaly carbonate which, yielding now and then a very fair percentage of iron, is hardly present in sufficient quantities to guarantee any profitable working.

The great wealth of the valley is the coal. I was perfectly amazed at the number of beds of this valuable material I met with, from a few inches to 11 ft. in thickness. The country is very hilly, and in riding through it you constantly see outcrops of coal by the side of the roads. The strata are nearly horizontal, the dip being about 40 ft. to the mile, and the different beds are separated by varying thicknesses of shale and sandstone. The quality of the coal is excellent, consisting of splint, soft bituminous, and cannel. The mining and getting of it is most simple and inexpensive. Shafting is not necessary anywhere, as levels are driven directly into the bed from the side of the hill. In many cases timbering can even be dispensed with on account of the extreme solidity of the roofs. On the whole there are about 60 ft. of workable coal in the various beds, taking the measure of the vertical section. After allowing a reasonable number for valleys and loss, &c., I submit that my estimation of about 30,000 tons per acre is moderate. Add to this that every facility for transport by rail and by water is offered by the existence of the Chesapeake and Ohio Railroad and the Great Kanawha, and that a ready market will be found in the West for any amount of coal and coke.

Everybody must be struck by the prospects of that part of the world for an enterprising man. Too few of these have found their way there yet, and the beautiful and rich States in the Far West have for a long time outshone their sisters in the East. Perhaps the latter may turn out no poorer in the end, and would, I think, be quite ready to show their gratitude for any amiable attentions shown them. As far as my experience goes I feel confident that any new settler will be hailed with pleasure by the West Virginians and treated as a friend. Especially mining men ought to direct their attention to that promising coal field. The mines at present open in the Kanawha Valley are, to say the least, not worked in a scientific manner. As brilliant exceptions we might name the mines at Hawk's Nest and Cannelton, the latter turning out cannel of superior quality.

I have taken the liberty of thus far intruding on your valuable space, Mr. Editor, as I think it might possibly interest some of your readers to know what impression West Virginia had made on a mining engineer who went to that country for no other purpose than to study it from a professional point of view. W. DE MULLER.

*Royal School of Mines, Nov.* 23.

SAN PEDRO (CHILI) COPPER MINING COMPANY.

SIR,—It is now upwards of four months since the allotment of the shares in the above company took place; it is, therefore, surely time for the shareholders to read some report in the *Mining Journal* of the progress, &c., which has been made at the mine. I hope the directors will be good enough to let the shareholders have some information as soon as possible.—*Nov.* 23. A SHAREHOLDER.

NOUVEAU MONDE MINING COMPANY.

SIR,—A correspondent in last week's Journal seems puzzled to account for the price of the shares in the Nouveau Monde Company being now so low as compared with what it stood at some months ago. The reason is not far to seek. It is, no doubt, because we are kept in the dark as to the real state of affairs, the directors having seemingly forgotten the promise made at the meeting in June last, to furnish a financial statement of the concern. While they remain obstinately silent one does not know what confidence is to be placed in the scattered, unauthentic statements made by one person and another, anxious to give what information he can to his fellow-shareholders. One writes that the 70,000*l.* required for the purchase of the Nicupai Mine had all been subscribed. Another that 20,000*l.* in money, and the balance in shares, was to be sent to the vandors. A third mentions that Mr. Oxland had sailed last month to complete the purchase (I thought he was in Venezuela, in charge of the mine, and that the purchase had long since been completed). Yet another, that a director and the agent had gone out to the mine.

Some reference has been made to a notice posted at the Stock Exchange, but shareholders in the provinces are not enlightened by this means. Why do not the directors give us some information through the Journal? While they continue reticent the public is allowed to buy a worthless property, if the mine is worked out, as some aver; and if, on the other hand, it it is so really valuable as has been represented, they permit their doubting shareholders to sacrifice their shares at ridiculously low prices.

Whatever may be the practice of French companies, it is not the custom among English directors to throw a veil over their proceedings. We do not require to have exposed every particular of pending negociations, but surely we are entitled to be informed what is being done with our property by those who are entrusted with the management of it. A BEWILDERED SHAREHOLDER.

*Liverpool, Nov.* 24.

PESTARENA GOLD MINE.

SIR,—In consideration of your propounding the enquiry of your correspondent—although compared with the entire body of the shareholders it can, perhaps, only apply to a comparatively few individuals—I would say that undoubtedly the unmarketable character of preference as compared with ordinary Pestarena shares presents at first sight a somewhat puzzling anomaly, but which, while it may not admit of full explication, may to a considerable extent be accounted for by the fact that the preference shares, unlike the ordinary, are not quoted in the Stock Exchange list, and so as a medium of sale or purchase stand outside of usual market operations; and further that research and enquiry would show him that precisely the same corresponding position applies in other instances in the market similarly as in that of Pestarena. Altogether Pestarena Mines seem destined to cumulative disadvantages; while, as compared with many other properties, their existence is more or less partially ignored in the columns of the Press. At the present time the periodical notice which the annual meeting might secure for them is postponed between one and two months beyond the date at which it was last held. Certainly, so far as produce is concerned, they appear to merit a better fate when I casually notice at the time of writing a prospectus to hand of one of the prominent new Indian gold mining companies gives 1 oz. 8 dwts. 20 grs. per ton as the recommendatory resulting yield of trial samples, while the last monthly return of the Pestarena Mine (as apart from the Val Toppa) gives results actually in excess of these figures—1 oz. 9 dwts. 6 grs. per ton. Such figures certainly make it a matter of regret to the shareholders that the details of the present year's report to compare with those of last—manifestly gratifying to those interested as such a comparison would be—have not been issued at its customary date. A SHAREHOLDER.

*Nov.* 23.

THE PANULCILLO COPPER COMPANY.

SIR,—The wisdom of those mining investors who know how to arm "the obdured breast with stubborn patience as with triple steel," is shown in the case of the Panulcillo Copper Company. After a hard struggle they have at last paid their debts, and now they finally emerge from the Non-Dividend List to enter, let us hope for ever, the Dividend column. A dividend of 2s. 6d. per share will be payable on Dec. 4, but that is only the beginning. The net profits, after deducting London charges (671*l.*) this year amount to 27,212*l.* 19s. 1d., and considering that the London expenditure includes extras to the amount of 1300*l.*, which cannot recur next year, there is no reason to doubt but that in 1881 some 30,000*l.* will be available for dividends, and this if copper only keeps at its present low price. But should it improve in value, as must occur sooner or later with trade expanding in every direction, then of course the above 30,000*l.* would increase proportionately. Meanwhile it will be acceptable as a pleasant minimum, enabling the distribution of 15 per cent. on the share capital. Again, the ore reserves of Panulcillo are still enormous, and as Mr. Welch, the able manager, points out in his last report, "they are confined to only one spot," and a large tract of ground is yet unexplored "below the long adit and beneath the present stopes which have given such immense quantities of ore." Here Mr. Welch prophecies important discoveries are imminent, and they will go to swell the huge total of nearly 800,000 quintals metrico at which the ore reserves are now estimated as a minimum. Already an unexpected and valuable discovery of good ore has been made in No. 4 stope, and rumour hath it that highly satisfactory statements in confirmation of Mr. Welch's anticipations will be forthcoming at the meeting on Tuesday next. Should that be so, we may see these shares at 8*l.* each again, a figure at which they have been bought before under circumstances far less favourable than the present.

*Nov.* 24. A SHAREHOLDER.

THE PANULCILLO MINING COMPANY

SIR,—The present material and financial position of the Panulcillo Mine, as shown by the accounts just published for the year ending June 30, is well worth the attention of the investing public. On July 1, 1879, the mine was still in debt on its working account to the amount of 19,309*l.* 6s. 5d. The net profits of the mines to June 30, 1880, have amounted to 27,212*l.* 19s. 1d. Not only is the whole outstanding debt paid off, but a dividend of 2s. 6d. is declared on the 50,000 shares of the company, leaving about 1650*l.* to be carried forward. In future all the profits made will be available for dividends, as the debts are now extinguished. The report of Mr. Welch, the manager at Panulcillo, on the condition of the mine is most satisfactory, and he anticipates a production of 240,000 quintals metrico for the current half-year, against 188,492 quintals metrico in the half-year ended June 30.

The debt being now extinguished, the charges for interest and advances will be materially reduced; and, moreover, the extraordinary charge of 1260*l.* entailed upon the company during 1879-80, on the death of their late manager, will not recur. The balance of profits may, therefore, reasonably be expected to increase during the current year, and if the price of copper should rise, as is generally anticipated, the increase will assume large dimensions. If, however, the profits should remain stationary at the same figure of 27,000*l.*, a dividend of more than 10s. per share will be received in 1881. The price of Panulcillo shares is at present about 5½. In December, 1879, when the overdraft of 19,000*l.* still existed, the price was 5½, and in February, 1880, the shares rose to 6, and even higher. The company being now free from debt, and substantial dividends being assured for the future, it would appear that the shares stand at present considerably below their value, more especially considering the well-established character of Panulcillo as a productive mine.

*Nov.* 22. A SHAREHOLDER

CENTRAL RAILROAD COMPANY OF NEW JERSEY.

SIR,—It is evident that good American railway bonds must advance in price, from the fact that the United States Government will issue a 3½ per cent. 33 years bond, into which the $264,000,000 of Sixes, due next June, and $508,000,000 of Fives, which the Government have the option to pay on] or after next May, are to be convertible. The Seven per Cent. Income Bonds of the Central Railroad Company of New Jersey are quoted 96 to 99, and the whole amount of capital is 490,000*l.*, which precedes the ordinary share capital of 4,120,000*l.* for dividends, and the shares are quoted 81 to 83. Now, if the Americans freely buy the shares at the above prices the Income Bonds should be worth very much more than they now are quoted in London, and beyond all question they are a much safer and better security than many of the new issues recently introduced on the London market.—*London, Nov.* 25. B. E.

THE LEAD TRADE.

SIR,—Since our last the market has been a falling one, and every sale effected has been at a lower price. The sales are as follow:—

| | | | |
|---|---|---|---|
| 170 tons of (40 ozs.) Spanish lead, at per ton ... | £15 | 10 | 0 |
| 250 tons of rich Spanish lead ..... | 15 | 11 | 3 |

Rich Spanish lead is offering much more freely, and to effect sales lower prices in each case will have to be taken, as managers cannot sell their lead products. German lead is offering all over the first six months of 1881 at 15*l.* 5s., and if 15*l.* 2s. 6d. was offered firm it would be taken. Northumberland and Yorkshire soft leads in poor demand, and only very low prices will tempt buyers. STOCKS.

*Newcastle-on-Tyne, Nov.* 24.

THE TIN TRADE.

SIR,—I learned yesterday from a metal broker in a large way of business at Amsterdam that keen competitive demand is certain to be displayed at the sale of Banca tin on Tuesday next, several large orders having been booked for this side and Germany. He expects, therefore, a further rise of tin after the sale, and says that much more tin *ex* sale has already been sold on the spot than will be available. If you will give due prominence to this important authoritative statement, for the correctness of which I vouch, you will oblige—

*Shepherd's Bush, Nov.* 24. H. TIEDEMAN.

BORING MACHINERY IN CORNWALL.

SIR,—In last week's Journal, page 1339, we have read the following:—"West Basset by the way by the aid of the Darlington Drill is being very rapidly developed in its best ground." Your Correspondent in making that statement is in error, inasmuch as from the first introduction of Boring Machinery into the West Basset Mine, the Eclipse and the Eclipse only has been the drill used. The Darlington is not in use in any mine in Cornwall, we believe, except Wheal Agar.—*London, Nov.* 25. HATHORN AND CO.

DOLCOATH AND TINCROFT.

SIR,—On referring to the Journal of June 19 I find that tin stood at from 77*l.* to 80*l.* per ton, and the price of Dolcoaths was 54 to 56, and Tincrofts 17 to 18. In last Saturday's Journal, when tin stood at 91*l.*, or at least 11*l.* per ton higher, Dolcoaths are quoted 55 to 57, and Tincrofts 17 to 18. It appears nowadays that shares do not rise as the price of metals rise. Can any of your readers or the pursers of the mines account for this?—*Nov.* 23. PERCY PAYNE.

TIN MINING EXTRAORDINARY IN CORNWALL.

SIR,—I have just learned that a rock of tinstone, estimated to weigh 5 tons, has been blasted in the great south lode at the New Eliza Mine since my recent visit to St. Blazey, and that an assay made therefrom gave the following astounding—considering the depth from surface and magnitude of the lode—results:—4 cwts. 3 qrs. 19 lbs. of black tin to the ton of stone. As some of your readers may feel interested in hearing that the statements made in the writer's last letter hereon—"that this lode is evidently getting more valuable as progress is made towards the south wall," and again, "that this mine bids fair to stand at no great distance of time second to none in the county"—are thus being rapidly verified, I shall feel much obliged by your giving publicity to these remarks in next week's Journal. I have also been informed that this magnificent lode has been cut within the last few days in another part of the sett, where it is about 20 ft. in width, and of the same character as it is in that where first discovered. Surely, Sir, here are indications of wealth sufficient to turn the prevailing insane rush after Indian gold mines to those investments so much nearer—and, probably, very much safer also—which are now being opened up in the St. Blazey and other districts in Cornwall.

Time will not now admit of the continuance of the remarks commenced in last week's Journal upon the other mines therein referred to, but I shall hope, with your permission, Mr. Editor, to do so in your first December number. FISH, TIN, AND COPPER.

*London, Nov.* 23.

TIN MINING—NEW ELIZA AND DISTRICT.

SIR,—The letter of your correspondent in last week's Journal has surprised the writer less, perhaps, than any other person. Having known the St. Blazey district for some years (especially the lands of Sir Coleman Rashleigh, Bart.) he has been more than surprised that so little attention has been paid by capitalists to the district. Now that such an astonishing rich lode should have been discovered near the surface with the stratification most congenial for tin, giving unmistakable signs of greater riches in depth, we believe the investing public will at once devote that attention to the neighbourhood which it deserves, It may here be said that Sir Coleman Rashleigh has granted his leases at 1-24th dues, which is very liberal. The celebrated Eliza Consols is such a well known success that comment on it is unnecessary. The management and the proprietary here may be congratulated; 100 per cent. per annum on the original capital, after having repaid that capital nearly threefold, is an investment rarely met with in ordinary business. Immediately at the east of the former two mines, and about midway between them and old Fowey Consols, is situated the Rashleigh Tin and Copper Mine, lately registered as a limited company in 12,500 shares. In this mine a considerable amount of useful work has been done, and many thousands of pounds worth of tin sold. The main engine-shaft has been sunk 25 fms., and strange to say that although the immense workings by the ancients on the backs of the lodes in the hill north of this shaft no effort appears to have been made to cross-cut for these lodes. It is doubtless here the rich lode just opened on in New Eliza will be found, while the other lodes reported on by Mr. Josiah Thomas, of Dolcoath Mine, and others (see prospectus of the Rashleigh Mine), are sufficient to guarantee great and permanent success. The shareholders in this mine may rest assured of having obtained an investment of great value. Further east and nearly adjoining Fowey Consols is also a belt of ground the very subsoil of which is impregnated with tin, and on the South Wheal Elizabeth, worked we believe by local parties, gives unmistakable signs of great riches. The whole of these mines are in the midst of what was one of the richest mining districts of Cornwall, and paid thousands in dividends on little over units of pounds sterling in outlay.

It is gratifying that while large sums of money are being absorbed for foreign gold mines our home industries are not altogether neglected. The attention devoted to the Devon Great Consols, and the great advance in the value of the stock of the company under the able management of its executive, together with the success of Wheal Crebar, the spirited working of Haven Great United, We-

Devon Consols, &c., are omens good of augury. Hingston Down, too, and Gunnislake (Clitters) are deservingly attracting attention by real investors. We are glad to hear also that what was known as West Wheal Williams is to be worked. This property is situated immediately north of Hingston Down, east of Devon Consols and West Devon Consols, and south of Devon Great United, each of which, except Devon Consols, it adjoins. Here are lodes of great promise, and the proprietors anticipate a rich mine speedily. THOMAS VOSPER.

*Stoke Newington-road, Nov.* 24.

## DEVON FRIENDSHIP MINING COMPANY, AND DEVON GREAT CONSOLS.

SIR,—As a director of the Devon Friendship Company I must ask you to allow me to refer to the reckless and unscrupulous effusion of your anonymous correspondent in last week's *Mining Journal*. He signs himself "One Interested," and says that he writes as a shareholder in Devon Great Consols and Devon Great United. This explanation was quite needless, for it is evident where the shoe pinches. But your correspondent has not the manliness to state his real grievance, and in a most unwarrantable manner attacks the merits of Devon Friendship by insinuations which, if he had read the prospectus, he would have seen were opposed to the truth.

Your correspondent speaks of Devon Friendship as a deep old mine; but if he had referred to the Chairman of the two companies in which he is interested he would have found that he (the Chairman) had lately been actively engaged in carrying out an amalgamation of two old and abandoned mines with another which has been at work for some years with a certain success, with a view to increase the value of the united property. If I mistake not, also the Devon Great United Company was formed to acquire and work old abandoned mines. So that, even if your correspondent's remark had included the whole truth it could not, *per se*, have received the approval of his Chairman. But when your correspondent had referred to his Chairman on the above point he would have also found that he (the Chairman) had himself lately been anxious to secure this apparently now despised Devon Friendship property; and, if I am rightly informed, even expressed a readiness to join the present proprietors if he were made managing director.

The prospectus of Devon Friendship states that the south part of the sett is considered by good authorities to be one of the finest pieces of mining ground in West Devon; and it adds that the first object of the company will be the vigorous working of "Bennets' and the other south lodes, *which are as yet almost entirely unwrought*, and which run parallel to those which have been so rich and profitable in the old mine," the result of which it is believed will be handsome profits. Your correspondent either suppressed this fact unintentionally or knowingly. If the former, it shows the culpable recklessness of his assertions; if the latter, I shall not name the word that would appropriately describe him.

Your correspondent considers the remarks made regarding Devon Great Consols most unjustifiable. He does not say what these remarks are of which he complains. I suppose he refers to Capt. Daw's statement that there is more arsenical mundic in Devon Friendship than there is in Devon Great Consols, and that he considers the former will be at work longer than the latter, and will be paying dividends when the latter is almost forgotten. Now, if this is Capt. Daw's opinion, why should he not state it? And who is better able and entitled to say so than Capt. Daw from his long practical acquaintance with the Devon Friendship? I am not aware whether Capt. Daw has recently examined Devon Great Consols underground; but that was unnecessary for this purpose, as he could compare what the mine was *actually doing*, and the quality of its copper ore sales, with what he was convinced Devon Friendship could do, and with the quality of its ore. Why is your correspondent so sensitive on this matter? Why does it so wildly excite his wrath? It may indicate the measure of Capt. Daw's opinion of Devon Friendship, but it cannot depreciate the value of Devon Great Consols under its legimate position. Both mines appear to have large quantities of arsenical mundic (at Devon Friendship considerable profits have been made in the last few years from even the halvans); and, as it happens the price of arsenic is high at present, both are likely to do well from this source while that price continues. Capt. Daw was probably looking beyond this, and considering the position of both mines when they might have again to depend entirely on their copper and tin ores for their returns and profits, and he could not fail to include in his calculations the difference in the quality of the copper ores at the two mines, and to consider what would be the present position of Devon Great Consols but for the current value of arsenic. The course adopted by your correspondent has forced me to point out these justifications of Capt. Daw's views and opinions, and to vindicate the position claimed for Devon Friendship.

It is quite unnecessary that I should say a word to defend Mr. York, whose sense of justice, truth, and fair play is evidently higher than that of your correspondent's. HENRY WM. LAMB.

*Nov.* 24.

## DEVON FRIENDSHIP MINE.

SIR,—I was surprised to see the letter of "One Interested" in your last week's Journal. I have recently inspected this property, with the assistance of the plans, on several occasions, and have given a full report to the company just formed to work it. The immediate object is to developc Bennett's and the other south lodes which run parallel to the old workings, but are almost entirely unwrought in the eastern part of the sett. Bennett's shaft is already down about 100 fms., and, excepting the recent profitable workings above the adit, comparatively nothing has been done in this part of the mine. The present profits from arsenic can be increased as the mine is drained and opened up. It is well known in both western counties that where the back of a lode yields large returns of arsenical mundic, generally large deposits of copper are found beneath. Many advantages not possessed by the old company are possessed by the new. For instance, the dues are reduced to 1-30th, and there are easier means of conveying materials and produce to and from the mine. Again, the mine will have the benefit of the last five years' experience with boring machinery and explosives, whereby the ground can be opened three times as fast as formerly. It is calculated that by putting large pitwork in Bennett's shaft the old mine will be drained to the same depth as Bennett's; and I have every reason to suppose that the large quantities of arsenical mundic on the old lodes (formerly considered of no value) can be economically and profitably rendered marketable. I consider Devon Friendship Mine an unusually important property; and such an one would not remain a day unworked in the Camborne district.

*Cook's Kitchen, Nov.* 25. CHAS. THOMAS.

## LEADHILLS.

SIR,—"Holder" in last week's Journal though advocating public criticism does not to my mind set a very honest example in his remarks upon Leadhills. During the last four years he says this mine has paid 15,000*l.* in dividends, whereas the fact is it has only paid that amount during the whole of its existence, which is something nearer eight years than four. This does not amount to 1¾ per cent. per annum on the whole of the paid up capital, and what is this beggerly pittance to boast about I should like to know? Again, "Holder" says that the 140 tons now being raised is yielding a profit of 3000*l.* per month, which is about 30 per cent. per annum interest. We were told at the meeting by a director that it would require a monthly return of 200 tons to yield 1000*l.*, or 10¾ per cent. per annum. The statements put forward by "Holder" are, therefore, totally unreliable. My shares cost me about double their present price, and I, in common with most shareholders, am anxious to see them advance, but it is not at all necessary to puff or misrepresent matters in order to enhance the value of Leadhills. The true reason why our shares are so low and neglected is not the want of weekly reports but the want of dividends, and the cause of this absence is revealed in the annual reports and balance-sheets. The fact of the manager having a large stake in the company is in our case no element of strength whatever. Men who are in the share business by profession may be just as much interested in the fall at one time as in the rise at another. The most inexplicable feature to my mind in the conduct of this mine is the restricted output. We are told if we increased the output—which we could do easily—we should earn a dividend. Then why on earth is the output not increased?—*Nov.* 23. ANOTHER HOLDER.

## WHEAL HONY AND TRELAWNY UNITED MINES.

SIR,—During last week I availed myself of an opportunity to visit these mines, of which so much has been heard of late, and I cannot find language to express my gratification at witnessing the activity displayed at this early stage of operations. Not being a stranger to the mines of Liskeard, I wanted little information with regard to the vast amount of ores raised from those which immediately adjoin the Hony Estate, or the immense profits paid to the shareholders; but I was glad to hear from Capt. Hancock (who readily afforded all the information asked for) that it is the intention of the directors to do the whole of the work in the most substantial manner throughout, and with this view they have purchased the largest and probably the best pumping-engine in Cornwall, and that a steam capstan, drawing-engine, &c., have been secured on most favourable terms. The pumps, &c., are to be new, as well as the main rods. This is as it should be, and not, as too many mines are started in the present day, with old rubbishy machinery, half the time under repair, and the workpeople idle. It is well known throughout the county that there is an extensive and splendid run of mines here, and I cannot but compliment the executive on their plans for working them. I wish the company the greatest success, which is theirs assuredly if they continue with the energy and judgment with which they have begun. CARADON.

## THE MORAY FIRTH MINING COMPANY.

SIR,—Seeing a letter in last week's *Mining Journal* from Mr. T. F. Wiley, as secretary of the above company, saying he desires to call attention to the fact that "the report I referred to was not made at the instigation or by the authority of either the directors or their manager," I may state that the gentleman for whom I reported informed me he was the proprietor of 10,000 shares out of the 18,000 shares issued; and if not a director or manager, I presume, if this is correct (and if it is contradicted I shall give the name of the gentleman), might soon easily become either the one or the other, or both if desired.

The letter which appeared in the Journal was sent to the gentleman for perusal, and was personally handed to you by him, with a request it should appear, and certainly with no intention of annoying Mr. T. F. Wiley.—*Goginan, Nov.* 23. ABSALOM FRANCIS.

## LLANRWST MINING COMPANY.

SIR,—May I ask through the Journal for some information in reference to what is doing in carrying out the scheme of reconstruction which, at the extraordinary meeting held on Aug. 10 last, it was understood that no time would be lost in bringing the same to perfection, but up to the present I have not heard anything of the matter.—*Nov.* 23. SHAREHOLDER.

## CORNISH MINING—THE UNWROUGHT MINERAL GROUND OF GWENNAP.

SIR,—In advocating the development of new ground over the resuscitation of deep watery expensive mines, I am actuated from the two-fold motive of the greater chance of making discoveries and consequent profits, and also the less expensive way in arriving at the object of such research. It is not a little surprising that large tracts of unwrought ground should remain idle, seeing that the greatest success throughout the county has attended the development of such new ground. It is patent to those who know Cornwall and its rich families, that their wealth is due to this kind of mining; the risk is little; indeed the loss of the whole amount required is comparatively nothing, while striking into a rich bunch of mineral will soon lead to great wealth. In this district the greatest discoveries have been through shallow mining; suffice it to mention only a few instances. Tresavean divided 60,000*l.* among the proprietary in one year with only 1000*l.* outlay; Penstruthal divided 65,000*l.*, with less than 1000*l.* called from the shareholders, while the Great Consols, with a nominal outlay, returned profits in 18 years of 320,000*l.* I am pleased to find, from recent discoveries, that history is about to repeat itself. I saw yesterday, at Trevince Consols, which adjoins the last-named mine, in virgin ground, at 6 fms. deep, a similar outcrop, which I have every reason to believe will extend into a large deposit of copper in depth. There is now a leader in the lode of rich copper ore from 2 to 3 ft. wide, the lode altogether being from 15 to 20 ft. wide, in character similar to the mines mentioned. The outcrop of the lode at 27 fms. from surface at Mount Carbis will also prove by extended operations to be the saddle (so to speak) of another great discovery; it is valued now at 50*l.* per fathom. With such discoveries so close to the surface the capital required to bring these two mines into a profitably paying state is very small, while they will probably vie with the best ever found in the parish, their great yield being unparalled in the annals of Cornish mining.

*St. Day Scorrier, Cornwall, Nov.* 23. CHAS BAWDEN.

## LEAD MINING IN LLANARMON.

SIR,—In reading the *Mining Journal* from week to week, as I do, it is pleasing to see the very manifest signs of activity that are going on in different parts of the country. It affords me the greatest gratification that this district is no exception to the rule; and others interested in the work going on at Bodidris, Lead Era, and Llandegla must be greatly encouraged by the work and the indications manifesting themselves, as shown in the reports from the various mines, as they appear weekly in the Journal. I should also be much more pleased, and the district and all concerned would, I feel sure, be greatly benefited if the ground at and about the Nant, Brynmwyn, and Nant Adda could be obtained by some spirited company and developed as I think it deserves to be. Amongst this group of mines is situated the Lady Ann Silver Lead Mining Company's sett. This company was registered as a limited company on Sept. 8, 1880, and, from what I can hear of it, is in a fair way of becoming a very valuable undertaking. I do not wish to make statements simply, but desire to give such evidence in connection with this property as will warrant all who desire to enter the company in such a step that they are likely before long to enjoy the benefits of doing so. A point arose in discussing the terms of one of the paragraphs in the prospectus as to the correctness of the statement therein, and its accuracy being questioned Capt. J. A. Ede was appealed to as an authority upon the matter. The sentence referred to runs as follows:—"The Lady Ann Mines immediately adjoin the Nant Mines, from which over 55,000*l.* worth of silver-lead ore was obtained in less than eight years' working, and the lodes of the Nant run into and through this property (the Lady Ann) in well-defined position, and are unworked." Captain Ede's reply as to the correctness of the former part of the sentence is as follows:—"The tabular statement mentioned in yours of the 7th inst. is an extract from the books of the Westminster Company. The quantity of ore sold up to June 26, 1849, was 5425 tons, which realised upwards of 56,380*l.* The books were posted by old Capt. Clemence, who was a clerk at the mines during the time. With respect to your position it is impregnable. If you had stated that it was almost as much again I could not undertake to attack you. The question arises how much had been taken away before proper accounts were kept? Judging from the deep cuttings, average value of lode, &c., thousands of tons. When you call you can see the accounts, giving the number of parcels, &c., sold.—Yours truly, J. A. Ede." The latter part of the sentence in question can be verified by any one at any time, as the men are now working in the Great Nant or Westminster lode, in this property—the Lady Ann—with the most satisfactory results up to the point at which they have arrived, and the indications improve as the men advance in the level. In the mining report of the Oldham Standard of Nov. 13, 1880, there appears the following notice of this property and company: "And the Lady Ann Silver-Lead Mining Company (Limited). Of the last it may be confidently stated there is every element of success about it; lead discovered, veins or lodes known and proved, easy royalites small fixed rents, well qualified manager, chiefly a local directorate, secretary, bankers, and auditor all local and well known; shares, small amount and easy payments, labour at the mines cheap and plentiful." The mining report of the Daily Northern Times of Nov. 22, in noticing the different lead mines of Flintshire and Denbighshire, says, "A box of fine specimens of lead ore and blende has been received from the Lady Ann Mines, and may now be seen at the secretary's office, Clegg-street, Oldham." I think such valuable evidence upon an unmistakable excellent property deserves the careful attention of persons with means desiring investments likely to prove, as this is, and very soon too, so very valuable and permanent, as the runs of ore in the lodes in this property" have been noted for their permanency and continuity." It is said by Captain Absalom Francis, of Wrexham, in his report upon this property—"I must congratulate you upon possessing in Lady Ann a property sufficiently extensive on the main lodes, in the very pick of positions, and one in which a small outlay cannot fail, in my opinion, to develope into a rich and lasting mine." ENQUIRER

## THE WEST MOSTYN COAL AND IRON COMPANY.

SIR,—The Chairman of this company, in the Journal of Oct. 27, replied to a letter of mine of Oct. 17, in which he states that a meeting will be at once convened. I hope this is not all a bag of wind. The Chairman says, "we strongly recommend the completion of the works to the shareholders," &c. But this cannot be done without money, and how does Col. Shakespear propose to get it? Now, I would suggest that funds be found to employ a first-class firm of solicitors—say, Newman, Stretton, and Hilliard—to entirely liquidate the present company and form a new one, giving all the present shareholders fully paid-up deferred shares in the new company. I have friends who hold over 20,000*l.* worth of shares in the present company, and I believe I can get 20,000*l.* subscribed towards a new one and the re-working of this splendid property. As things look at present all seems a dead loss.—*Forest Hill, Nov.* 24. R. G. S.

## CAMBRIAN MINING COMPANY.

SIR,—Your North Wales Correspondent, with his usual incorrectness when writing of this company, stated in last week's Journal that last year the Cambrian Mines sold 300 tons of copper, value 1500*l.*, or 5*l.* per ton. The fact is, that we sold for the year 1879 261 tons for 2609*l.*, average 10*l.* per ton; and this year we have already sold 304 tons for 2792*l.*, average 9*l.* per ton. My directors do not wish to attach any undue importance to your Correspondent's statements personally; but it is the fact that you have published the same in the *Mining Journal* that makes me request the insertion of this correction.—*London, Nov.* 25. GEO. H. KEENE, Managing Director.

## ANCIENT AND MODERN MINING ENGINEERING.

SIR,—The great expectations as to the results which will be achieved in the development of the auriferous deposits of Southern India by the introduction of modern mining engineering appliances, attach some interest to the consideration of what has been done in the way of mining engineering progress during only the past half century. We know that the Orientals, although highly civilised, have adopted that style of civilisation which, although preventing retrogression, offers no encouragement to progress. In this the Asiatics differ widely from Europeans and Americans, as can be very quickly shown. Taking the single matter of the sinking of shafts, and it will be found that what a century ago would have been regarded as absurd and impracticable, now come within every-day practice, and it is the same with almost every other branch of mining engineering.

Twenty years ago the deepest mining shafts in the world reached only about 2000 ft. below the surface. The very deepest, we believe, was a metalliferous mine in Hanover, which had been carried down to the depth of 2900 ft. The deepest perpendicular shaft at present in existence is the Adalbert shaft at Przibram, in Bohemia, which has reached the depth of 1000 metres—3280 ft. The attainment of that depth was made the occasion of three days' festival, and still further noticed by the striking off of a large number of commemorative silver medals, of the value of a florin each. There is no record of the beginning of work on this mine, although its written history goes back to 1527. There are, however, two other localities where a greater depth has been reached than at the Adalbert shaft, but not in a perpendicular line. These are, first, the Rocksalt borehole, near Sperenberg, not far from Berlin, which a few years ago had been bored to a depth of 4175 ft.; and, secondly, the coal mine at Viviers Leums, in Belgium, where the miners, by shaft sinking, together with boring, have reached a total depth of 3542 ft. Taking each singly, the deepest shafts in the world, at the present time, are in Germany and Belgium, whilst England claims the fifth deepest shaft and France the sixth deepest.

It will, of course, be understood that the depth reached depends in a great measure upen the character of the deposits worked and so many other circumstances, that the depth of the mine shafts cannot be in all cases accepted as evidence of the mining engineering ability, although to some extent they are so. The place of honour must, of course, be given to the already mentioned Adalbert shaft, 3280 ft. deep. As the top of this shaft is 1732 ft. above the sea level, the bottom is, of course, 1548 ft. below it. Two shafts near Gilly, in Belgium, are sunk to the depth of 2847 ft. At this depth both were connected by a horizontal drift, from there an exploring shaft was sunk to a further depth of 666 ft., and from there again a trial hole, 49 ft. in depth, is put down, so that the total depth reached is 3542 ft. As they did not, in the bore hole, discover the sought-for coal seam, they have returned to the shaft at the 2847 level. Next comes the Eingekerts shaft of the Lugauer Coal Mining Company, Rhenania, Lugau, in the kingdom of Saxony—2653 ft. deep. Then the Sampson shaft of the Oberhartz Lead and Silver Mining Works, near St. Andreasberg, Hanover, has a depth of 2437 ft., and is at present the deepest shaft of Prussian mining. The winding shaft of the Rosebridge Colliery, near Wigan, has a depth of 2458 ft. Coal is drawn from the "hanging on" at the 2418 level; the time of the cage running this distance being 55 secs.; the winding rope has, therefore, an average speed of 44 ft. per second. The deepest shaft in France is one at the coal mines of St. Luke, near St. Chaumont, in the Loire department, France—2253 ft. The shaft of the Dunkirk Colliery, near Dukinfield, Lancashire, is 2069 ft. deep, but the mining is prosecuted to a further depth of 755 ft. by shafts from the lower levels, making a total depth of the mine of 2824 ft. The deepest shaft of the collieries near Ronchamp, in France, is 1881 ft. A similar depth has been reached by the argentiferous mine near Kongsberg, in Norway. The mines belonging to the Roros Copper Works, in Norway, have worked to the depth of from 2540 to 4270 ft. The Amelia shaft, in the mine works near Schemnitz, in Hungary, is 1782 ft. deep. The No. 1 Camphausen shaft, near Fishbach, in the Department of the Saarbruck Collieries, has now reached the depth of 1650 ft., and may possibly become the deepest shaft in Prussia. The Monkwearmouth, Durham; Kirkless Hall (California pit); and Navigation Colliery, Aberdare, are deep only as compared with other pits in the same districts, the depths being only 1716 ft., 1035 ft., and 1095 ft. respectively. It would require about 13,000 pits like Monkwearmouth, one below the other, to reach the earth's centre, so that there is still plenty of room for engineering progress. In one case only a depth exceeding a mile from the earth's surface has been penetrated, and that is at the Artesian well, at Potsdam, Missouri, U.S., where the chisels have reached no less than 5500 ft., or 1 mile and 220 ft., so that if the questionable theory that the temperature of the earth increases 1 degree for every 60 ft. penetrated be true the water ought to issue at about 150° or 160°, and it would be interesting to know whether it does so.

Now, as we have seen that in the matter of shaft-sinking we can now reach twice the depth attainable only two generations ago, and thus make collieries and other mine works yield large profits, although had we not progressed they would have had before this to be abandoned, is it unreasonable to suppose that the application of the vast experience of gold reefs and gold mining acquired in Australia and America, to the auriferous deposits of the Wynaad and Mysore will facilitate such a system of working as will ensure enormous profits to those concerned. Rock-drills, dynamite, and the various new processes for manipulating the auriferous ore for the extraction of the precious metal, have produced such a revolution in mining engineering practice even in America and Australia, that mines which

thirty years ago would have been passed over as valueless, now occupy a prominent position amongst permanent dividend-paying mines, and the comparative augmentation of profits must of necessity be greater in the case of India, where the natives have done all the dead work for exposing the position of the reefs, and left to Europeans the opportunity of introducing the most approved modern practice in stoping away the discovered reefs and bringing the gold to market.

*City, Nov.* 23. MAHESH OSOORA.

## ABANDONED MINES—DEVON CONSOLS MEETING.

SIR,—In a report of the recent general meeting of the Devon Consols Company which I have seen, Mr. Stewart (who I understand is one of the auditors of that company, and also of Devon Great United) stated that Messrs. John Taylor and Sons were not in the habit of giving up an undertaking if there was anything in it. This must be bad news for the shareholders in the Devon Great United, who have lately purchased a mine called Wheal Fortescue which was abandoned by Messrs. Taylor. On the other hand there is a famous mining property in Cornwall which was worked by the Messrs. Taylor under the title of Buller and Beauchamp. This property was abandoned by them, and afterwards worked by Messrs. Davey, and as is well known, gave under their management immense profits, amounting, I believe, to nearly 300,000*l.* I think other cases might be given, but the above are sufficient to refute the assertion of Mr. Stewart, who is evidently ignorant of the fact that probably every great mine (not even excepting the Devon Great Consols) has been abandoned, many of them more than once, before they arrived at success.

TRUTH.

## THE VINCENT TIN MINING COMPANY

SIR,—Having occasion to visit the Vincent Tin Mine, situate five miles east from the Caradon Hills, I think it will be interesting to the shareholders to know that since I was on the mine in August last the lode has most materially improved, being between 3 and 4 ft. wide, with large stones of tin disseminated throughout, some of them being so rich for tin, and of so pure a quality, as hardly to require to be sent to the stamps at all. This occurs on the Horseborough lode, situated on the upper portion of the sett, where I myself broke about 1 cwt. of ore of the quality described, and brought the same to London. The lode at this portion is nearly an end big, and of a masterly and well defined character; to my mind fully realising the expectations predicted by Capt. William Nancarrow, who gave such a promising account of the mine in August last.

The work at the mine has progressed satisfactorily; and now that vigorous working has commenced, the supply of ore, which at present amounts to about 80 tons at surface and 20 tons lying broken in the stopes, will be largely increased. From the information I have gathered from the men who last worked in the Lower shaft, I hear that this portion of the mine is quite equal, if not better, than Horseborough lode, previously described, and, being deeper (being driven on in the 30 fm. level), is in far more settled ground. The character of the ground throughout the mine is congenial; and, to give the shareholders an idea of the price paid for working the same, I understand that No. 1 stope west has been let at 3*l.* per fm., and another contract has also been let to drive east at 4*l.* 15s. per fathom. I may congratulate my fellow shaacholders on their possession of such a property.—*Nov.* 26. A SHAREHOLDER.

[For remainder of Original Correspondence see this day's Journal.]

## TRADE OF THE TYNE AND WEAR.

*Nov.* 24.—There has been a good supply of steam and other tonnage here of late, and shipment of gas and other coal has been active at Tyne Dock and other points on the Tyne and Wear. A fair amount of Northumberland and Durham steam coal has been shipped. The house coal market is steady; late advances have been well sustained, and as severe cold weather has set in the business increases, and prices are expected to advance further. There is a good demand for coke at late rates; the price of this article does not fluctuate so much as formerly. There is a steady demand both for inland consumption and for export. Coke is bought freely at 9s. to 10s. per ton at the ovens, and sales are being made till June next at about those rates, sellers refusing to commit themselves further. Manufacturing coal is in good demand, and prices are firm with a rising tendency. The Seaham Colliery Relief Fund has now reached 11,000*l.* Coal is being worked in the Main Coal and Hetton Seams. The Maudlin Seam is still closed where 28 bodies are entombed, but the fire is now expected to be subdued, and in about ten days the dams will be removed and the workings reopened.

Very close attention has been paid lately to the ventilation of coal mines in this district, and increased attention has also been given to the safety-lamps in use. A great variety of those lamps are in use, but those in most general use are the original Davy, the Stephenson, and the Clanny, and a few Muescler lamps have been introduced lately. Repeated experiments have proved that all these lamps are more or less unsafe when exposed to an explosive mixture moving at a certain speed. They are all safe when placed in an explosive atmosphere which is still, or only moving at a slow rate of speed. But some of them continue to burn in an explosive mixture, while others are extinguished, and for this reason the Stephenson lamp has always been held in high repute, as it is extinguished when placed in an explosive mixture; yet this lamp even in its most improved form has made comparatively little progres, and this is an anomaly difficult to account for. The original Davy lamp has continued to be extensively used, and the only precaution used until lately to protect the flame of this lamp from air currents was a tin shield placed on the outside of the gauze, but some important improvements have been lately introduced. The lamp in one case has been enclosed entirely in a tin case, and this case is provided with a glass on one side, which emits the light. This case effectually protects the flame of the lamp from air currents, and also from injury from chance blows. In another case a glass cylinder is placed on the outside of the gauze, which extends from the oil vessel to the cap which covers the top of the gauze, and this also effectually protects the flame of the lamp from air currents; it also affords sufficient light, but it does not protect the lamp from injury so much as the tin case arrangement. The Davy lamp has continued in use in most cases for horse drivers, putters, and all men and boys who require to move about in the roads of mines on account of its light weight and portability when compared with the other lamps, the Clanny, Stephenson, &c., being used by hewers and others who work in fixed places. These additions to the Davy lamp are certainly very important; the enclosure of the lamp in a light tin case especially will increase the safety of the lamp when exposed to an explosive mixture to a very great degree, and there is no doubt if no objections are urged on the ground of decreased light that this improvement will be very generally adopted. A large number of these cases for the Davy lamp have already been ordered for one of the large collieries in Durham at Messrs. Abbot's works, Gateshead. Any improvement which adds to the safety of the lamps used in mines must be hailed with satisfaction by all connected with these works, but at the same time the fact is not lost sight of that these lamps are only used as a safeguard against sudden outbursts of gas, or accumulations of gas, caused by falls of roof, in air courses, &c., and not for the purpose of enabling the men to continue working in explosive mixtures. It will not be denied that great exertions have been made to provide ample ventilation in the fiery mines of this district during the past few years, and in most cases the total quantity of air put in circulation has been largely increased, the object being to keep the roadways and all working places perfectly free from explosive gas, but it may be observed that it is hardly possible to preserve this state of matters under all contingencies, such as sudden and great falls of the barometer, &c. In extensive coal mines which give off much gas the greatest difficulty in keeping the workings clear is to be found in the variations of level caused either by faults or the natural rise of the seams, and whatever improvements may be effected in ventilation it is evident that good safety-lamps will always be required for working fiery coal seams.

The iron trade, on the whole, continues to improve, and as iron has to a great extent been sold for the present year, and also forward for part of next year, the position of makers is considerably improved. There is a large quantity of iron going into store at the present time, but this does not attract much attention, the shipments continue heavy, and there is sometimes a scarcity of No. 3 iron in the market. There is also an increased demand for forge pig. A revival of trade is expected, and higher prices are looked for shortly. In the finished iron department more work is being turned out than at any time since the revival took place; prices are firmly maintained, with a rising tendency. Messrs. Bolckow, Vaughan, and Co. have secured an Italian order for 5000 tons of steel rails, and also an order for 2000 tons of Cleveland steel rails for the North-Eastern Railway Company. The latter are intended to be laid down without delay, and when they are tested if found satisfactory the old rails over the whole system will in time be replaced by steel. It is expected that a very large business will be done then in steel, and several extensive improvements are being made at the Estin Works to meet the anticipated demand. There are two methods of working the Thomas-Gilchrist process, both equally effective, but one of those processes is troublesome, and should experience prove that the other is suitable the old method will be discarded.

## REPORT FROM CORNWALL.

*Nov.* 25.—Once more matters have advanced from the negative to the positive, and the hopes of some definite improvement in the prices of tin have been so far realised by a rise in the standards. We never at any time go ahead very rapidly, but after all that is to be commended; and if we can have steady progress—be it ever so slow—after this long term of fluctuation and hope deferred, most of those who are interested in mining affairs will be very well satisfied. Some very sanguine views as to the immediate future are being expressed, and not without grounds, but we have been taught by such bitter experience that there is "many a slip twixt the cup and the lip," that although it is evident the supply of tin has been more than overtaken by the demand, market operations may still intervene with considerable effect in causing further delay. Now-a-days it is really more necessary to exercise caution in the face of a rising market than of a falling one, to avoid involvement in the whirl of outside speculation. It is very cheering, however, under any circumstances to see 1880 progressing towards its close under such favourable auspices. In spite of all ups and downs and drawbacks we have made real progress during the present year.

There ought to be a good many matters of interest in connection with the important mine meetings now rapidly becoming due, and we are very much mistaken if the reports in several cases will not give unusual satisfaction. The South Frances and West Basset amalgamation scheme must now be regarded as abandoned. Time will show, and probably before long, with how much wisdom or the contrary.

Mr. Lanyon, as the lessee of Wheal Friendship, has very properly declined to raise the stack of the arsenic-works there in obedience to the dictate of the ill-advised and one-sided Rural Sanitary Authority, who, as it seems to us, against the due weight of evidence and ignoring what may be called scientific commonsense, traced to his works evils which had—if the facts are correctly stated—their origin elsewhere. Now the Authority intends to wait and see what the new company will do in the matter. All that is necessary, doubtless which in this case, according to our view of the affair, appears to be nothing. Newlyn East, in Cornwall, has recently been visited by typhoid fever. Had there been any unfortunate arsenic-works in the immediate vicinity, beyond all question an attempt would have been made to saddle it with the blame. Popular ignorance of arsenic and its effects is very remarkable.

## REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

*Nov.* 25.—The way in which the shares on the Tankerville Consols have been taken up must be very flattering to the promoters of the undertaking, and must also be very encouraging to owners of good mining property in the vicinity of the Amalgamated Mines, for these mines are not the only good ones in the little but good mining district of Shropshire. At the South Roman Gravels the great Roman lode, so productive a little to the north in the Roman Gravels Mine, has just been discovered by trenching, and probably further explorations will reveal its productiveness southward. It is said that a company is in the course of formation to work this property in an efficient manner.

At Bryn Dyfi Lead Mine, Cardiganshire, 1 ft. of solid ore besides several strings of ore in 3 ft. of ore ground is reported. At the Penybontbren United Mines, near Talybont, an important discovery of ore is announced in Hobson's lode. It is a pity the agent from the Camdwr Bach, or South Cambrian Mine, cannot announce his success without interpreting in an hostile spirit references which may have been made to his mine. His temper is hardly that of the man who has got 25,000*l.* worth of ore at his back. With these reserves he could afford to be generous towards his neighbours. I for one wish the mine success, although I might in time past have discountenanced the use of boastful language.

A boiler explosion, attended with terribly fatal results, took place on Saturday morning at the New British Ironworks, near Ruabon. There were six boilers, four of which were in work, one was not in use, and the other was unusable. Two of the boilers burst and destroyed the other two in use, crushing them up with the greatest ease. The half of one of the boilers, weighing 2 tons, was blown to a distance of 80 yards. The works in the neighbourhood were much injured. About 80 men were at work at the time of the explosion, of these five were killed and about 20 injured. Many of the others had marvellous escapes. The inquest was opened by Mr. Thelwall, the Coroner, at the Eagles Inn, Acrefair, on Monday, and adjourned until Monday week, in order that the Home Secretary may be communicated with. In his charge to the jury the Coroner is reported to have said that "the explosion could not be put down as an accidental explosion, which could not have been foreseen and guarded against." I hope there may be some mistake here, otherwise it seems like a judicial functionary prejudging the case the jury have to enquire into before the evidence is adduced, a practice that cannot be too strongly condemned.

An Act of Parliament is to be applied for next session for the incorporation of a board in the salt districts of Cheshire to make provision for the assessment, levy, and application of compensation for damage by subsidence of land, in consequence of the working of salt by pumping or raising brine in the salt districts of Cheshire. This is a remedy for a very real grievance, which has substantially been recommended before in these columns. There is no sense or fairness in the arrangement whereby the land of A can be pumped up to enrich B without A being benefited in some way. Certainly A should be idemnified for loss. The water percolating from the surfaee in this salt district flowing over saline matter in the rocks below dissolves such matter, and the mixture is pumped up as brine; it may be miles from the point where the water first entered. The consequence is that cavities are made all along the course of the water or salt run underground, into which the land subsides, to the destruction of buildings, and with the most utter disregard for the boundaries of property and the water rights upon the surface.

The excellent letter of "Silurian," in last week's Journal, deserves notice if only to say that the writer has understated the number of the slate ranges in the Lower Silurian strata of North Wales. The first of these may be described as starting with the new and successful quarry of Toel Clynnog, bending eastward, and passing up the Pennant Valley by the Prince of Wales and other quarries to the promising quarries—Glanyrafon included—about Rhyddu. The second starts from near Criccieth, and contains the Gorseddu Quarry, one that has, I am sure, a great future, Cwm Cyd, and several trials near Beddgelert, and by Caer Gors to the West Snowdon Quarry. The third runs from Cynicht, near Portmadoc, to the east of Beddgelert, where there are several quarries, to Capel Curig and Llanyrwchwyn, on the banks of the Conway. The fourth starts from near Llanfrothren, and contains the great quarries of Festiniog, by Bwlchyslater and Rhiwbach Quarries to the quarries of Dolyddelen, and bending round to the east of Penmachno. The fifth starts from near Towyn, and contains the quarries of the Corris district, ending on the north-east at Dinas Mawddy. All these ranges run parallel to each other, from the south-west to the north-east. They are all opened in similar strata, under varying conditions. The great Cambrian zone, as "Silurian" describes it, runs in the same direction. A description of the quarries along the course of this range might not be uninteresting. The slate trade is improving, and there is a mistake in the paragraph going the round of the papers that the men in the Festiniog Quarries have been reduced to working four days a-week.

## REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

*Nov.* 25.—The South Staffordshire Iron Trade is not in quite so good a position this week as last. At the meetings of the trade yesterday and to-day this was apparent. Buyers were not so eager to place forward contracts, and the orders arriving at the mills and forges were reported to be small. Sheets were in best demand at 7*l.* 10s. to 7*l.* 15s. for singles, 8*l.* 10s. for doubles, and 10*l.* for lattens. Scrap-iron needed by the sheet-makers was dearer by 12s. 6d. upon a month ago, and 7s. upon a week ago. A new sheetworks has started this week at Darlaston. The Round Oak Works of the Earl of Dudley are turning out some fine girders for the War Department. Pigs are rather quieter. Staffordshire sorts are priced at 2*l.* to 3*l.* 7s. 6d., and Derbyshire sorts 2*l.* 8s. to 2*l.* 12s. 6d. Coal unimproved.

The ironworkers in North and South Staffordshire and in East Worcestershire have at meetings which they have just been holding instructed their secretary to give notice for the withdrawal of those clauses in the wages sliding scale that have reference to railway dues, freightage, insurance, discount, and commission, so as to place the wages scale upon a more equitable basis.

A draft award for the levying of a mines drainage rate for the Old Hill district has just been issued by the arbitrators under the Mines Drainage Acts. The Saltwells and Dudley Wood Collieries of the Earl of Dudley, the mines on the south side of the River Stour, and and those situated in the Cradley trough, are totally exempted from payment. But, with the exception of six proprietors, to whom graduation has been allowed, all the other owners will have to pay the full rate. A public meeting to hear appeals will be held on Dec. 11 in Wolverhampton.

At a Council meeting of the Oldbury, Tipton, Bradley, and West Bromwich Miners' Association, on Tuesday, it was resolved—"That as the mineowners did not until after the passing of the Employers' Liability Bill advocate mutual assurance, the Council earnestly requests all miners not to join in any principle of assurance whatever, and advices workmen everywhere to reject such proposals, seeing that lives are frequently sacrificed by negligence and incompetence."

Mr. T. Brassey, M.P., the umpire in the Staffordshire potters' wages dispute, has just issued his award, in which he regrets that trade is not in a sufficiently prosperous state to justify an advance of wages. It will be remembered that the operatives prayed for a return to the wages ruling before the 8½ per cent. reduction awarded in November last by Lord Hatherton. It is expected that in a day or two the men will all have returned to work.

At Dudley Police Court, on Friday, Mr. John Skidmore, manager of the Earl of Dudley's Saltwells Colliery, near Dudley, was charged with a breach of the Mines Regulation Act by not providing for adequate ventilation in the mine. On Aug. 30 gas was detected in a portion of the mine, and after a fan had been set to work to let the gas off a workman examined the place with a naked light. An explosion immediately occurred, and caused the death of a workman named Parsons. The man who was responsible for this neglect had been summoned by Mr. Skidmore and fined, and the latter was now held liable for not causing the mine to be constantly ventilated. He was fined 5*l.* and costs.

## REPORT FROM DERBYSHIRE AND YORKSHIRE.

*Nov.* 25.—In the Peak and other lead mining districts work has been going on much as usual, but the output of ore does not appear to increase. It may be said that in some places where the mines are situate there is an entire want of railway accommodation, which is a great drawback to the development of the mineral, but this is likely to be remedied, a movement having been on foot for some time past for the purpose of inducing some of the companies to extend their lines, which is likely to be successful. In the more northern districts the iron trade continues in a healthy state, as the production of the furnaces is well kept up, and the demand also. Rather more is being done at the rolling mills in merchant and other iron, but the requirements are not equal to what could be turned out. The foundries have been doing rather more in pipes and other castings, and a good deal of machinery is also being turned out. Steel rails keep the makers as busy as ever at the works at Dronfield, which are on a most extensive scale. At the collieries in almost every direction there has of late been a marked increase in the output of coal, and household qualities have gone off freely. At those places sending largely to the Metropolis—such as Clay Cross, Grassmoor, Eckington, and Blackwell—a large tonnage has been sent over the Midland, whilst a good deal has also been forwarded over the same line to other parts of the South, as well as to the West of England. Steam coal does not go off so well as it did; still, the tonnage consumed at the local furnaces has been fully equal to what it has been for some months past, whilst a good deal has also been taken by the railway companies. The exports, however, are considerably below what they were during the summer months. Gas coal, too, has been in request by various companies, but under contracts entered into some time since. The coke trade continues good, consequent upon the activity in the iron and steel branches, so that makers have been doing well.

In Sheffield most branches, especially the heavy ones, have been active, so that the workmen have been well employed. Some of the mills have been engaged on armour-plates for our own Government, but as yet there has not much been done in those composed of iron and steel, with respect to which so many experiments were made during the present year at Portsmouth by request of the Admiralty, some of which seemed to be in every way satisfactory. Ship and boiler plates, as well as hoops, bars, sheets, and telegraphic wire, have been in good demand. Every description of railway material is being largely produced, including tires, axles, springs, and points. Steel rails are as active as ever for America as well as for our own lines, but prices ase scarcely so firm as they have been. The cutlery manufacturers are now working well in most qualities of goods, a good deal being for exportation. The foundries are in much the same state as they have been for many weeks past, few them being anything like busy, but steel smelters are better off. The output of the furnaces has been kept up to the average, and most of what is made is absorbed by the mills and other works, and prices have been firm A considerable tonnage of hematite iron is being imported, a large proportion of which goes into the Bessemer converters.

The Coal Trade of South Yorkshire is in a healthier state than for some time past, but this remark applies to household qualities, which there does not appear any difficulty to dispose of. Such, however, is not the case with respect to steam qualities, which do not sell so well, and as both descriptions have to be got together the "hards" have to be stacked, and a good deal will remain on the ground until the spring. Gas coal is being extensively sent away to different parts of England, where extensive contracts are held. No movement has yet been made by the colliery owner of the district to contract themselves out of the Employers Liability Bill.

There was a meeting of the creditors of Messrs. J. Fenton and Son, Sykes Works, Sheffield, a few days ago, when an arrangement was come to, one of the partners offering a composition of 6s. in 1*l.*, which was accepted. The Messrs. Fenton are well known for patent steel wheels for corfs, and a peculiar method for fixing them.

The directors of the Parkgate Iron Company (Limited), one of the largest concerns in South Yorkshire, issued circulars on Nov. 19 to the shareholders, in which they state that during the past half-year the late improvement in the iron trade has disappeared, and it is now in a somewhat depressed condition. They, however, look forward with some degree of confidence to a general improvement in the trade of the country. The company have had four blast furnaces at work during the past six months. There is a moderate demand for manufactured iron. From the financial results of the past half-year, and the prospects of the next year, the directors have determined to pay an interim dividend at the rate of 5 per

cent. per annum (or 1*l.* 12s. 6d. per share) on account of the profits of the current year.

# Meetings of Public Companies.

## DEVON GREAT CONSOLS COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Austinfriars, on Wednesday,

Mr. PETER WATSON (Chairman and Managing Director) presiding.

Mr. W. H. ALLEN (the secretary) read the notice convening the meeting. The directors' and agents' reports, and statement of accounts, having been previously circulated amongst the shareholders, were submitted.

The directors have to report that the sales of copper ores for the six months from April 22 to Sept. 23, 1880, amounting to 4854 tons 2 cwts. 1 qr., realised 12,846*l.* 11s. 2d., or an average price of 2*l.* 12s. 3d. per ton. The directors would, however, here remark that although the price of copper has been somewhat fluctuating and lower, still they consider the copper smelters ought to have given the company a much higher price for these sales of ores, made at what is called the Cornish Ticketing, inasmuch as the average produce was 5 1/16, and the unit obtained only 9s. 7d.; whereas, with a produce of only 5 in the previous half-year, 10s. 9d. was given per unit.

The desirability of selling this company's ores at Swansea, where there is greater competition, instead of at the Cornish Ticketing, unless better prices can be obtained, has been brought before the board, and is still under consideration. The amount received for arsenic during the six months has been 15,390*l.* 10s. 5d., as appears in the accounts under the head of Reduction Works. It will be observed that whilst the receipts have been for six months the expenditure has been for seven months (28 weeks). This is owing to there being thirteen (4 weeks) monthly pay days, and the extra month became payable only on the last day (Oct. 30) of making up this half-year's accounts.

The large outlay necessary for the erection of the additional machinery at Watson's part of the mines has been accomplished. A cargo of staves from Norway, which, with freight, &c., amounted to about 550*l.*, is also included, and there are also items for rock-drills and land damage, &c., charged in this half-years accounts, amounting to 330*l.*, and a further sum of 260*l.* has been paid on account of the new leases, &c., granted by His Grace the Duke of Bedford, in which is inserted 1-18th royalties instead of 1-12th as heretofore. The half-year's accounts now submitted show that after the payment of the 152nd and 153rd dividends in the six months, amounting to 9216*l.*, and the payments of the several amounts above named, amounting to about 1140*l.*, there remains the satisfactory sum of cash and bills receivable in hand of 7014*l.* 6s. 4d., as against a credit balance of only 2380*l.* 0s. 2d. in the corresponding half-year of 1879, and 1661*l.* 2s. 6d. in 1878. In the last half-year's accounts was stated the heavy outlay incurred in rock-boring machinery, &c., and the board now point with satisfaction to greater expedition in driving the levels, as mentioned in Capt. Isaac Richard's (the manager) very full and encouraging report annexed to that of the directors.

A further outlay for an air compressor and rock-drills, tubing, &c., is now under the consideration of the board in order to still more vigorously develope and open out the ore ground in these extensive runs of mines. A renewal of rails and repairs to some portion of the company's railway will be necessary, and the materials for this purpose have been ordered. Some further expenditure will also be necessary on the arsenic works.

Notwithstanding the heavy outlay incurred during the last 12 months, and to which the attention of the shareholders has been directed, there have been already three quarterly dividends paid this year, amounting to 13,312*l.*, and another quarterly dividend will be declared by the board on the day of the half-yearly meeting of shareholders. The directors afforded the shareholders an opportunity of visiting the mines on Oct. 6, and those who were there on that day expressed themselves much gratified with their visit.

The directors hope and anticipate that as the trade and commerce of the country continue to progress they will receive better prices for this company's copper ores and arsenic, and thus enable them not only to pay to the shareholders satisfactory dividends, but at the same time keep in good and efficient repair as extensive and valuable a stock of plant and machinery as is in the possession of any mining company in this country.

Capt. Isaac Richards concludes an elaborate report upon the progress made in the further development of the different lodes throughout the mines, and upon the extent of ground explored during the past six months, and the present prospects in view, by remarking that in the 205, west of the new shaft, the lode is very large, and of a fine character, and judging from the encouraging indications presented they have great hopes that good discoveries will also be made in this direction. In the 175 and 160, west of Railway shaft, on the south part of the new south lode, the indications are also good, and they look forward to similar results from these promising points of operation. At Watson's the lode in the 76, both east and west of the engine-shaft, being of good size—fully 3 ft. wide—and of a promising character, containing good stones of arsenical mundic and copper ore of good quality, we entertain great hopes that at an increased depth, and also as the workings are extended east and west in the present levels, good discoveries of mineral will also be met with in this part of the company's property. It is important also to observe that by means of the rock-drill machinery, which has been adopted on an extensive scale in the different workings for some considerable time, they are are enabled to double their speed as compared with hand labour, a fact of great consequence in connection with the further development of these great mines. The ore reserves throughout the mines amount to 24,630 tons, and arsenical mundic 21,000 tons.

The CHAIRMAN said: Gentlemen, it affords me as Chairman and Managing Director of the company, as well as my colleagues, very great pleasure to meet you here to-day, and to present to you what I hope you will consider to be a very good statement of accounts for the last six months. You will observe that during the last six months we have sold 4854 tons of copper ore for 12,846*l.*, or an average price of 2*l.* 12s. 6d. per ton, but you will see by the report that the directors do not consider, notwithstanding the fall in the price of copper, they have received the price which they expected from the Cornish Ticketing copper smelters. We have received, I am sorry to say, a very indifferent price for our ores, and if you will pass on to the next paragraph of the report you will see that it is now under the consideration of the board as to whether the time has not arrived when this company, as well as the other leading copper companies, if not the whole of the copper mines in Cornwall, should not well consider the desirability of selling their ores where there is greater competition—at Swansea. (Hear, hear.) I think it is incumbent on you as adventurers in this mine to well consider this important matter, and I should be glad if any of the shareholders would go into this matter, and I should also be happy to receive any remarks on the subject. I have watched this question closer than ever during the past six months, and I am bound to say that if we had sold this copper ore at the Swansea Ticketing it would have been a good deal better for this company, and not only for this company but for the lord—the Duke of Bedford; and this remark applies to all the copper mines in Cornwall. I have had communications with some of the large copper mines in Cornwall on the subject, and I think they only want to have a start from such a leading mine as this to decide as to whether it would not be better for them, as well as for ourselves, to adopt a different method of selling the ore. There are only about three or four buyers at these Cornish Ticketings, and we know they can sit down and make their own terms of purchase. I am bound to say, with all respect to the Cornish smelters, I think the time has arrived when these ticketings are little better than a farce, and that we should take this matter into our serious consideration, and decide whether we could not more advantageously sell the ores at Swansea, or by private ticketings, as is done by many other concerns. I think this is a question which is a matter that is important to the well-being of this company. I might, in passing, tell you that our copper ores have realised very indifferent prices. You will remember that in August, 1879, as recorded in the previous report, Chili bars realised the lowest price on record—53*l.* 10s. per ton. From that time it gradually rose to 66*l.* per ton; that was 12 months ago. From time to time again it went on steadily till March last—just before we last met—when it reached 71*l.* per ton; but during this account you will see that some of our copper ore has been sold at very much reduced prices, in consequence of the price of copper falling to 58*l.* per ton. That was in June last, and from that time it has gradually risen to 61*l.* per ton, which is about the present price; but you will observe that between seven months ago—that is in March last—and the present time the price of copper has fallen 10*l.* per ton; that is to say, if we had only had the price during the last six months that we had in March last—71*l.* per ton—our credit would have been something like 2000*l.* more in this account than it is. I point this out to you because in going through these things it is of vital importance that the shareholders should know the exact state of our affairs. Then I pass on to the next paragraph, from which you will see that the account which is presented to you to-day is of six months' receipts and seven months' expenditure. The seventh month came in the very day that this account was closed, and, consequently, had it not been so this account would have shown something like 2500*l.* or 2800*l.* better than it does. Then I pass on to state that "the large outlay necessary for the erection of the additional machinery at Watson's part of the mine has been accomplished." Well, we have put down during the last twelve months, as you are aware from a previous account, something like 300 fms. of flat-rods, and erected machinery there, all of which has been paid for in the year. We have forked the main shaft, which was full of water, and not only have we forked it, but we have cleared it out and timbered it; and we are now in full swing sinking our 70 fm. level. Mr. Bawden, our purser, who is here to-day, informs me that from all Captain Richards and himself can see now, there are very good prospects in this part of the mine. We have likewise purchased a cargo of staves from Norway, which, with freight, &c., amounted to about the sum of 550*l.*, which has been charged in the present account; and there are also some items charged for rock-drills and land damage, &c., charged in this half-year's accounts amounting to 330*l.*, and a further sum of 260*l.* has been paid on account of the new leases, &c., granted by his Grace the Duke of Bedford, in which is inserted 1-18th royalties instead of 1-12th as heretofore. (Hear, hear.) Well, gentlemen, when you did Mr. Stanley Morris and myself the honour to appoint us trustees in the place of the late Mr. Thomas and Mr. Morris it was deemed advisable by the directors that we should have new leases, because there were many clauses inserted in the old leases compelling this company to do certain work. A very large amount—I suppose best part of 30,000*l.*—has been accomplished in accordance with those leases, and there were other matters which we had not accomplished, but which the duke very kindly agreed to forego—such as the driving of certain levels further—because they did not promise sufficiently. There was an idea that we were going to have tin there, but we thought it better not to drive this level further, and we got the permission of the duke to stop these ends. I am speaking now of what happened two or three years ago; but in the new leases these various clauses have been expunged and finally settled, and, therefore, we are not simply going on sufference and having rebates—that is, charging a 12th royalty and having a rebate of one-half of that amount. All these clauses have been expunged. The property is entirely the same—not a foot of ground has been taken away, and the leases are the same except that various clauses which bound us to do certain things have been expunged, and the royalty is fixed at 1-18th. (Hear, hear.) I think that is a very important feature for you gentlemen. (Hear, hear.) Mr. Finch, the solicitor, who is here, has had the matter in hand. There has been a very heavy expenditure in law, but these gentlemen, like other gentlemen, do not work for nothing, and besides this the stamps and other things have had to be paid for. This has been a work of labour, for there are something like a dozen leases. There is a great deal to get over and finally settle in such an operation. All the costs are not yet charged, but the greater amount is in the accounts. Mr. Finch is here and will tell you after I have finished that all the leases are in perfect order. Then we come to the paragraph in the report stating that the "half-year's accounts now submitted show that after the payment of the 152nd and 153rd dividends in the six months, and the payment of the several amounts (which I have given to you) amounting to about 1140*l.*, there is the satisfactory sum of cash and bills receivable in hand of 7014*l.* 6s. 4d., as against a credit balance of only 2380*l.* 0s. 2d. in the corresponding half-year of 1879, and 1661*l.* 2s. 6d. in 1878." I think, gentlemen, you will consider that exceedingly satisfactory. In the last half-year's accounts was stated the heavy outlay incurred in rock-boring machinery, &c., and the board now point with satisfaction to greater expedition in driving the levels, as mentioned in Capt. Isaac Richards' very full and encouraging report, which has been circulated. There is a further outlay to be made here, and I desire to put it fairly to you as I did two years ago or over, when I stated that it would be much better for you, gentlemen, to forego a dividend or two, or even three dividends, and to erect proper boring machinery to keep pace with the times and work the mine vigorously. I stated that because I felt it to be in your interests, and considering the welfare of this company. But notwithstanding this expenditure and this large amount of work we have paid you very handsome dividends. You will remember that 12 months ago the 137 was renewed. It had been idle for some time, but we set some men to drive it east. At that time there were only stones of ore, but we set this boring machinery to work, and I do not hesitate to tell you that if we had not had that machinery we should not have been at the place that we are now at for another nine or ten months. The 137 fm. level has during the last six months greatly improved. The lode has opened out to 1 ton, or 2 tons, and even 3 and 4 tons of ore, and 4 tons of mundic to the fathom. It is in whole ground right up to surface. Not a pick has been put underneath or above it, and it is going into ground entirely in reserve for the height above the 137 fm. level down to the deepest level going eastward—the 205. Therefore, this would not have happened; you would not have found the ore in this place; you would not have cut the great cross-course—which Mr. Bawden tells me has a magnificent appearance, being 12 or 13 ft. wide—possibly for five, six, or even twelve months. The heave is not very great, and we have intersected the lode, about which I will tell you something more presently. We have an enormous tract of ground there—about one mile in extent—and this is ground that we paid the Duke of Bedford something like 20,000*l.* for some years ago, when there was a renewal of the lease. We have an idea of putting these air-compressors and rock-boring machinery down at Watson's part of the mine, which is going into the same hill, and we think that with your sanction it would be a very desirable thing to do, and that we should work Watson's part of the mine more vigorously. Then we want to renew or repair the rails on the line from our works to Morwellham, not the whole distance, but in various places where renewals or repairs are required, and we have ordered the materials necessary for that purpose. Some further expenditure will also be necessary at our arsenic works. Notwithstanding the heavy outlay incurred during the last twelve months we have paid you 13,312*l.* in three quarterly dividends, and the directors have to-day resolved to make up the amount to 32s. per share for the year by the payment of a dividend of 6s. per share, which will be equivalent to 160 per cent. on your capital; or, in other words, it will give you 10 per cent. per annum in dividends taking the shares at the price of 16*l.* (Hear, hear.) When I refer back I find that eleven years ago a similar dividend was given, and our shares were selling in the market for something like 30*l.* or 32*l.* per present share, or 330*l.* for the old shares. I think when you come to consider the expenditure we have made during the last twelve months that the dividends we shall have paid must be regarded as very satisfactory. (Hear, hear.) We have had a discussion as to whether we should not give an 8s. dividend to-day, but I think it was a mistake to have given the bonus of 2s. per share at the time that we declared it. (Hear, hear.) It was left entirely in your hands (the shareholders), but I said that it would be much better to give the 8s. dividend, and not the 2s. bonus, and I still maintain that that would have been the better course for us to have adopted, for we as directors of this undertaking must know something about the management of this mine and its magnitude. There is a good deal for directors to do beyond giving the share holders dividends—you must keep up the plant and machinery, and you must lay out the property for future benefit, and not work it simply for to-day. (Hear, hear.) This has been done, and I hope under all the circumstances that the shareholders will consider this a very satisfactory statement that I have been able to make. (Hear, hear.) Mr. Bawden, our purser, is here, and says there is not the slightest reason why we should not give you an 8s. dividend, but still when you have expenditures to make, altogether I think it is best to err on the right side, and I think that a 6s. dividend, making 160 per cent. on your capital, or 12 per cent. on the present market price of your shares, must be considered exceedingly satisfactory. (Hear, hear.) Of course if we had better prices for our copper we should have had a larger dividend. I really have not anything more to inform you of to-day, except that we have some stones of ore here from the 137 east, which are, of course, only inferior stones to what we anticipated, but so far as we have gone through we have got a fine lode there. Capt. Richard wires to-day that he has been underground this morning—that is the reason he is not here to-day: and inasmuch as the shareholders had an opportunity of asking him all sorts of questions with regard to the property last month, we thought that under the circumstances it was unnecessary for him to be here to-day, as Mr. Bawden could give you any information you desired. And Capt. Richards adds—"The lode in the 137 east is cut into 5 ft., of the same character as before reported. The lode in the 160, west of Railway shaft, is improved, and is worth 4 tons of copper ore per fathom." That is a very important point. I shall, therefore, conclude my remarks by reiterating what the report states—

"The directors hope and anticipate that as the trade and commence of the country continue to progress they will receive better prices for this company's copper ores and arsenic, and thus enable them, not only to pay to the shareholders satisfactory dividends, but at the same time keep in good and efficient repair as extensive and valuable a stock of machinery as is in the possession of any mining company in this country."

We do hope and believe that we shall have better prices for copper ore, and not only that, but I am happy to say that our arsenic contract has been well executed so far, and we hope in the beginning of the year to make, another contract at better prices than we have had in the present one; so that, looking to all the circumstances, I only hope that we shall do as well in the next twelve months as we have done in the past. All depends on the discoveries that may be made, and on the prices which we may get for our copper ore and arsenic, as a matter of course. Just like a railway company, according to the traffic returns so are the dividends increased or decreased, and so it is with mining—you cannot control the markets, nor can you say what the profits will be unless you know the price your produce will realise. At the same time I think we should now expect better prices for copper and arsenic, seeing that the trade of the country is progressing, and that the colonies are beginning to buy iron and all other metals. I can only hope that we shall meet you at the end of this twelve months with as good a statement of accounts as we present to-day. I beg to thank you for your kind attention to my remarks. (Applause.)

Mr. PIGGOT thought that by the present system of selling their copper ores the smelters were getting the oyster and leaving the company the shell.

Mr. H. C. STEWART (one of the auditors) said he drew attention to this matter twelve months ago, and he had also expressed opinion that it would be better not to pay the 2s. bonus when that was urged by some of the shareholders against the suggestions of the board not to give the bonus.

The CHAIRMAN: You caught me in a weak moment. (A laugh.)

Mr. PETHERICK suggested that some economy might be made by employing rock-breaking machinery in place of the hundreds of boys and girls that, he believed, now did the work; and he asked whether some of the ground could not be let on tribute where it was not worth stoping.

Mr. MOSES BAWDEN (the purser) in reply, said the question of a stone breaker had been gone into very fully. In the first place they had not hundreds of girls working on the floors, and, comparatively speaking, they had very few at Devon Consols. If the question of the cost per ton of dressing the ore were gone into it would be found that they were really dressing the copper ore as cheaply as, if not cheaper, than any other mine in the district. He did not think the dressing cost 5s. per ton; it was nearer 4s. 6d. than 5s. per ton. The question had been fully considered by the agents, and they had come to the conclusion that it would not be desirable to employ rock breaking machinery. As to the tribute question, when he first went to the mine all the ground that would not pay for stoping was offered to the men on tribute, and they only got two pares of men to go on for a couple or three months at the standard tribute of 13s. 4d. in the 1*l.* He had put it to the men every month, offering not only 13s. 4d. in the 1*l.* for all the copper they might break, but also so much per ton for arsenical mundic; but they could not get the men to go on tribute, as they said the ground was stoped as close as possible, and that they did not know a place in the mine that they would take on tribute.

Mr. PETHERICK regarded the the explanations given by Mr. Bawden as very satisfactory.

The CHAIRMAN: In addition to that, I may say that our costs have increased during the last six months, as a matter of course. The labour charges have risen, as I promised long ago that as soon as we had better times the miners would receive better prices for their labour. (Hear, hear.) They have received better prices during the last six months, and they are perfectly satisfied with the present rate of wages. (Hear, hear.) Gentlemen, I beg to move "that the report of the board of directors now read, the statement of receipts and expenditure, and also Capt. Isaac Richards' reports on the mine, which have been circulated amongst the shareholders, be received and adopted, and entered on the minutes.

The Right Hon. Lord CLAUD HAMILTON seconded the motion.

Mr. STEWART said that when about a month ago he visited the mine, in company with some of the shareholders, he looked over the stock-book, cost-book, receiving-book, and the materials accounts, and with the valuable assistance of Mr. Youren, the accountant at the mines, and Mr. Allen, the secretary, he was enabled to make a thorough examination of the whole of the accounts, which he found to be kept in excellent order.

The CHAIRMAN, in reply to a suggestion that a larger dividend than 6s. should be paid, remarked that some shareholders in mines would wish to have the last bucket at the mine divided, but that was not the way they deal with things in this company. (Hear, hear.) Had the price of copper kept up during the last six months they would have been able to pay a 10s. dividend instead of a 6s. one.

Mr. BAWDEN remarked that during the six months they had received 8s. 9d. per unit. for their copper, as against 11s. 6d. per unit in the previous six months while the fine copper had realised 48*l.* 13s. 6d. per ton.

The motion was then put and carried unanimously.

Mr. STEWART then drew attention to the prospectus of a "Devon Friendship" Mining Company, which he characterised in somewhat severe terms, and expressed his surprise that the document which had been sent to him should bear the name of a gentleman who was a director of the Devon United Company, to which the Devon Friendship would be an opponent. The prospectus contained the cheering information that Devon Friendship would be flourishing when Devon Consols would be forgotten. (Laughter.) He thought there was an undercurrent of opposition almost amounting to libel. It would seem from the prospectus that the property was contiguous to Devon Consols, whereas it was about seven miles distant, and therefore a long way from Devon Great Consols.

Mr. FINCH (the solicitor) said he had looked through the prospectus, and he thought the shareholders of Devon Consols could very well afford to disregard it altogether. It was an offer of friendship—(laughter)—that he did not think they stood in need of, and it had occurred to him that there were times when one could better protect oneself from his enemies than from his friends. So far as he could ascertain the new company had not been registered—(oh, oh!)—and with regard to the offer of a priority of allotment to the Devon Consols and other specified shareholders, if the Bank of England shareholders had been added to the list he did not suppose many of those shareholders would have availed themselves of the offer. (Laughter.) He (Mr. Finch) also referred to the new leases of Devon Great Consols, and said he was very much indebted to the lessors for the courtesy and consideration extended to him in the preparation of them.

The CHAIRMAN announced that the dividend would be paid on and after Dec. 9, and remarked that he only hoped 12 months hence that they would have as good an account as he had had the pleasure of presenting at that meeting. With regard to the question raised as to Mr. York's name appearing on the prospectus of the Devon Friendship Company, it was no doubt an unfortunate circumstance, but it was a matter for his own consideration. At the same time Mr. York was not a director of Devon Great Consols, and neither directly nor indirectly had he (the Chairman) or any of his colleagues anything to do with the so-called Devon Friendship Mine. (Hear, hear.)

On the motion of Mr. STEWART, seconded by a shareholder, a cordial vote of thanks was passed to the Chairman, directors, and officers of the company.

The CHAIRMAN (Mr. Bawden) briefly returned thanks for the compliment, and the proceedings then terminated.

## DEVON GREAT UNITED COMPANY.

The first ordinary general meeting of shareholders was held at the offices of the company, Austinfriars, on Wednesday,

The Right Hon. Lord CLAUD HAMILTON, the Chairman, presiding.

Mr. W. H. ALLEN (the secretary) read the notice convening the meeting.

The CHAIRMAN said he presided on the present occasion at the request of his colleagues, but he had no doubt that in future the chair would be filled by Mr. Peter Watson, the managing director of the company. The company had been established so short a time that the report presented to-day was necessarily brief, but that brief report conveyed all that the directors had to convey regarding the progress and condition of the mine. Their trusted officer, Mr. Moses Bawden, was present, having come from the scene of action, and if the shareholders wished for more details Mr. Bawden would be glad to give them every information. No doubt many of those present had the pleasure, as he had, of visiting the mine some short time since, and he hoped they were as much gratified as he was on seeing the property, and seeing what a hopeful undertaking they had taken in hand. (Hear, hear.) Everything which had happened since the date of that visit had been of a satisfactory nature. The progress of the works had been as rapid, if not more so, than was anticipated. The machinery was working exceedingly well, the reservoir was fulfilling the object for which it was formed, and the pumping process was producing all the results which were anticipated. Therefore the directors were highly satisfied with the progress which had been made since that meeting. He did not kuow that he could say much more. His expectations of success were founded not upon the vague statements of salaried puffs in newspapers, but on the soundest information obtained on the spot, and strengthened by the fact that they had such men as Capt. Isaac Richards and Capt. Clemo, who had worked long in the district, and obtained the respect of all men. In conclusion, the Chairman moved that the report of the directors and agents, together wiih the statement of receipts and expenditure, be received and adopted, and entered upon the minutes.—Mr. GREEN seconded the motion.

Mr. PETER WATSON: Perhaps I may be permitted to say a few words with regard to this undertaking. (Hear, hear.) The gentleman who has seconded the resolution—Mr. Greer—was there at the mines a month ago, and I think he will tell you he was very much gratified, as most of the shareholders were. Everything went off happily and pleasantly. Mr. Bawden will say something when I have done with respect to the progress which has been made. There has been a heavy job to do there. As was pointed out to the shareholders at the meeting the great object for which we have started the engine is to fork the water out of the bottom of the mine. Satisfactory progress is being made. With respect to the future of the undertaking, time is the revealer of all things. It will be impossible to tell you what will be found there. History does repeat itself, and it is possible it may repeat itself with respect to this particular district. The directors consider, I consider, Mr. Bawden considers, and not least Capt. Richards and Capt. Clemo, and all associated with us in mining—they all bear testimony that there has been a vigorous prosecution of the mine, and in all probability a good future is in store for those who are in it, and those who will follow hereafter and invest in the property. (Hear, hear.) So far as the character of the strata is concerned, and so far as concerns the situation of the mine in regard to Devon Great Consols, I think everything bids fair for a great future for Devon Great United. (Cheers.)

Mr. MOSES BAWDEN said the shareholders would see by the report that on the 8th inst. they had dropped the lift to the 30, and it was hoped the plunger would be placed there in a fortnight. The plunger had now been fixed in the 30, and had drained 25 or 26 ft. below that level. This was very satisfactory, and must also, he thought, be satisfactory to the shareholders. In the course of another day or two they would drop another lift from that point to the bottom of the engine-shaft, 60 fms., and no doubt within another fortnight they would be able to work back through the 60. (Hear, hear.) They would then commence to drop the lift at the Willesford shaft, which was within a stone's throw of Devon Great Consols, and he had no doubt that in a short time they would be at the bottom of Willesford's shaft, which was 40 fms. below the 60, but no work of any consequence had been done below the 70. The old company had driven the level in the 80 a short distance west, and during the time the affairs of the company were being wound-up he took away a vast quantity of copper ore from the 70, which more than paid cost, and he came down to the 80. He thought in the course of another month or six weeks they would be nearer to the bottom of the mine, and if they did that he considered it about the best piece of work which had been done for many years in Devon and Cornish mines. (Cheers.) He had never seen so much work done in so little time as had been done in Devon Great United, and thanks were due to Capt. Isaac Richards and Capt. Clemo.

Mr. PETER WATSON: And the workmen employed also. (Hear, hear.)

Mr. MOSES BAWDEN: And the workmen under the direction of Capts. Isaac Richards and Clemo for the great progress which had been made. (Cheers.) He was sure the outlay for bringing in the water from the Tamar would repay for the outlay fiftyfold, for the water coming from the mine was so impregnated with copper that all the works and the boilers would have had to undergo a thorough repair every three years. There would be enough water for dressing purposes. It had been stated in the *Mining Journal* that the great cross-course in Devon Cousols cut off the Devon Consols lodes going west. Now this was a great mistake. The first discovery of ore in Devon Consols was made 70 to 80 fms. nearer the United than the cross-course. The Devon Great Consols lode as it got near Devon Great United split, but not on account of the cross-course, but on account of a little rising in the ground called Capel Tor.

The resolution for the adoption of the report and accounts was then put and carried.

The CHAIRMAN proposed the election as directors of Mr. Peter Watson and Mr. Henry Wilson. It would be futile to talk about Mr. Peter Watson, because all the shareholders were aware of his merits, both in this company as well as many others with which he was connected, and they all knew the results which had attended his labour, energy, talents, and successful efforts. (Cheers.) As to Mr. Wilson, he was a considerable shareholder, and had always shown himself a useful member. (Hear, hear.)

Mr. STEWART, in seconding the motion, said that Mr. Peter Watson had been well known for many years as the leading star in all mining matters. For years Mr. Watson had devoted his untiring energy to the wellfare of the neighbouring undertaking. He had seen the disadvantage under which it was labouring, but he had stuck to the ship and brought the undertaking into a condition of prosperity. (Cheers.)

The resolution was then put and carried.

Mr. PETER WATSON, in acknowledging his election, said he certainly had endeavoured to do his duty. Four years ago he told them what would be the case in Devon Great Consols. At that time people would say—"What on earth is Watson buying shares for at 1*l.* and 15s. per share in a worked out mine?" People thought the mine could never be resuscitated, but had gone to the wall. But he carefully nursed it, and did everything he could for the shareholders. There were some shareholders against him—they had their opinion, and he respected that opinion—but the great majority of the shareholders supported him, and he thought the success which attended his exertions had proved the full truth of his prognostications. (Cheers.) In like manner he would endeavour to do his duty in Devon Great United. He had been managing director, and he supposed he should maintain that position. They were fortunate in having such men as Mr. Bawden, Capt. Isaac Richards, and Capt. Clemo associated in the management of the mine. Everything was going on most harmoniously at the mine, and all were working together to promote the best interests of all concerned. (Hear, hear.)—Mr. H. WILSON also acknowledged his election.

A SHAREHOLDER asked whether Mr. York intended to remain on the board?

Mr. STEWART said that he thought he could not see how Mr. York could consistently remain on the board and Devon Friendship also.

The CHAIRMAN said that he himself had only heard of the matter the previous day. He rather believed that Mr. York had been misled, and did not quite understand the position in which he was placed, and he apprehended Mr. York would take the same view as had been expressed to-day.

Mr. PETER WATSON said he had known Mr. York for many years. He (Mr.

York) was a perfect gentleman, and a man of business; personally he esteemed Mr. York very much, and would say everything good and kind of him. He regretted that Mr. York was not here to-day, but in all probability he had some previous engagement. He believed Mr. York was now on his way to town. No doubt Mr. York would do that which he felt to be conscientiously right to his own position, and at the same time do his duty to the shareholders of this concern. (Hear, hear). The directors would convey to Mr. York the expression of opinion. Before setting down Mr. Watson mentioned that the signed leases of the Devon Great United property were now here, and produced by Mr. Barber, the solicitor.

Cordial votes of thanks were then passed to the Chairman and directors, and the meeting broke up.

## WEST KITTY MINING COMPANY.

The four-monthly meeting of adventurers was held on Thursday at the offices, Walbrook,—Mr. J. B. REYNOLDS in the chair.

Mr. F. J. HARVEY (secretary) read the notice calling the meeting.

The CHAIRMAN said: Gentlemen, at your request I take this chair, and perhaps it will be well for me to remind you what caused this company to spring into existence, and what its history from its commencement to the present time has been. The company was formed in accordance with the Act of Parliament of 1869 for the better Regulation of Mines within the Stannaries of Devon and Cornwall. The owners knowing for certain the valuable nature of their property from the profits made by the adjoining mine—Wheal Kitty—resolved not to take the purchase money or any part of it until the mine had made sufficient profits to discharge the obligations, and then not to require more than 3500*l.*, with 5 per cent. per annum interest for what cost them and others nearly 20,000*l.* But, gentlemen, there was an important condition to this agreement, and that was that the vendors should have the option of taking for themselves the whole of the shares in the new company, which option they availed themselves of to the fullest extent. The fact was, gentlemen, that the proprietors, wearied with repeated failures under the Limited Liability Principle, so called, were resolved to resort to the Cost-book System, and to carry it out to the letter. The first meeting after the new constitution was adopted was held on the mine on March 18 this year, when the terms of purchase were of course unanimously confirmed, and it was at this meeting that I announced to you that we had entered the outskirts of the tin-bearing ground, and that we had then 1 ton of tin on the mine as the result. Gentlemen will remember that I said—"This is a small beginning, but it is just such a beginning as will lead up to a large business." These anticipations are being quickly realised, as you will find before this meeting closes, for whilst at our meeting in London last July our tin sales, including this solitary ton, only realised 130*l.* (which, however, indicated substantial progress), the result of our sales from our last meeting to the present time has been the receipt in cash of 256*l.*, leaving as we have done some 80*l.* worth more at surface to be prepared for the market. This is not all, for we have laid open to sight 500*l.* worth at least from the 72 to the 60 fm. level—one or two other parts—thus showing as the upshot of improvements which have been during the past two months duly reported—discovery of tin of over 300*l.* Now, gentlemen, at this rate of progress it is not difficult to forecast the future, and it is because I think you will soon be able to pay off the purchase money and to divide profits that I have ventured to ask you to take a glance at the company's history at the present time. (Cheers.) The cost for the next four months' working will be over 800*l.*, because with increased returns we must have increased labour—I refer to the dressing purposes more particularly—and I hope that the shareholders will on no account fail to sanction a continuance of the most vigorous operations possible. Gentlemen, I am certain that you will not only sanction this policy, but that you will sanction no other. The committee which goes out of office are of one mind on this point, and I know of no individual in the company who would agree to a different line of action. But the question will be asked—How much tin do you expect to raise during the next four months? In answer to this the agent will gladly assure you that as much tin ground will be taken away as can be judiciously made available with due regard to the future development of the undertaking. But those shareholders who are not acquainted with the management of mines should be informed that if the intention is to lay open a permanent dividend mine, as this will be with proper management, no undue haste in taking away your reserves must be thought of for a moment. We must address ourselves to this business not only in the spirit of earnestness but in accord with the truest and therefore most successful mining principles. Capt. Vivian has always been very reticent with his promises, but in the result he has never disappointed us, but on the contrary; therefore I hope he will leave this meeting with the impression that he is to work with a view to opening up a permanent dividend mine, and not with the desire to startle us with large returns now at the cost of prosperity hereafter. (Hear, hear.) Now, gentlemen, as to the next four months' income and expenditure. Granting that the returns of tin are certain to increase, we cannot make less than a 2*s.* call; that will bring us 600*l.*, which, of course, will more than meet the deficiency on the ordinary expenditure. That surplus will go towards increased stamping and dressing appliances. We have already increased our dressing powers, but not to anything like the extent demanded by the discoveries we are now making, and if we continue to complete these appliances gradually we shall not feel the burden of the necessity by and bye. We have employed on the mine about 50 persons—as many as at present we have room for—but in the western part of the sett we hope to open up more ground, as the 72 west, towards New Kitty, looks so very favourable; and, in conclusion, let me say that in consequence of your successful endeavours at West Kitty I hope the mining operations in the St. Agnes district will be considerably extended. I have entered thus minutely into matters in order that the shareholders who so promptly supply the exchequer may know exactly how their money is spent, and what the prospects of a good return really are. (Cheers.)

The CHAIRMAN then proceeded to read the balance-sheet, which showed that the working costs for four months, including 200*l.* paid for additional land, amounted to 973*l.* 9*s.* 6*d.*, and the receipts 900*l.* (proceeds of last call) and 28*l.* 2*s.* 2*d.* from sales of tin, leaving balance in bankers' hands of 304*l.* 7*s.* 10*d.* There were no liabilities fully due and not paid, excepting 70*l.* minimum rents, and said he had never known a company where the calls were better paid. In conclusion he moved the adoption of the balance-sheet.

Capt. VIVIAN seconded the resolution, which was put and carried.

The CHAIRMAN then read the following report from the agent:—

Nov. 24.—I beg to hand you the following report of this mine:—Since the meeting held July 20 we have holed a rise from the 84 to the 72, which has ventilated the 72 east, and opened some tin ground for stoping; we are now taking away this ground at 6*l.* per fathom—lode worth 8*l.* per fathom. In the 72, driving east on the course of the lode, we have driven 9 fms. the past four months; the last 7 fms. driven through is worth from 12*l.* to 20*l.* per fathom—the lode in the end is now worth over 18*l.* per fathom. In the rise in the back of this level, 6 fms. behind the end, the lode is worth 12*l.* per fathom; the rise is up 2½ fms. above the level. In the 72 fathom level, driving west, the lode is about 2 ft. wide, very kindly in appearance, and worth 5*l.* per fathom. In the 60 driving east the lode is 2 ft. wide, producing rich stones of tin; the lode at this point is much the same as it was at the 72 below—we have about 7 fms. more to drive this level to get over the rise putting up at the 72. It will be seen from this report that the prospects of the mine have very much improved during the past four months. We have sold 256*l.* 2*s.* 2*d.* worth of tin, and opened over 500*l.* worth of tin ground to sight, and have about 80*l.* worth of tin on the mine at present. If the mine continues to open up as it has in the past two months additional stamping power will soon be required. I purpose to put up a 28-ft. water-wheel, 3 ft. wide, with 16 heads of stamps adjoining the stamps we have at present, to commence early in the spring with the work. As I have said lately, the mine is opening up quite to my expectations, and the objects aimed at in the large expenditure in the past are being quickly reached.—WM. VIVIAN.

The CHAIRMAN said that seeing such a comparatively small piece of ground had been opened the shareholders would have no difficulty in calculating what their future prospects would be. There was no doubt whatever that West Kitty would turn out to be a rich affair. (Cheers.) Capt. Vivian was present, and would be happy to answer any questions.

Capt. VIVIAN, in answer to a question, said that before the next meeting he hoped to have as good a lode at the 60 as at the 72. The lode at the 60 was precisely the same as it was at the 72 below.

The CHAIRMAN: Probably the shareholders would like to hear something of the prospects of the western part of the mine,

Capt. VIVIAN: At the western part of the mine there is an improvement, as can be seen from my report. We have a lode there worth 5*l.* per fathom driving towards the new cutting. It is about 50 or 60 fms. from the new cutting westward. We have had a great course of mundic and copper—a mixed up lode—about the shaft. We drove about 20 fms. east, and got into a course of tin, and we have driven 20 fms. west, and we are getting through the mundic and mixed up lode into quite a change, and it looks as if we were getting into a good course of tin similar to what we have going east. The 72 end will get into the new cut is about 50 to 60 fms. driving, but in the deeper levels we shall have further to drive. At the deeper levels we should have 300 to 400 fms. to drive before it would come out of the side; so I am now looking forward myself to a great course of tin in the western ground—I see no reason whatever to doubt it. (Cheers)

Mr. BUDD: The report to which we have listened must be perfectly satisfactory to every shareholder. I have been a shareholder for a considerable number of years, I do not remember how many, and in the course of that period the mine has passed through a variety of vicissitudes, sometimes looking very gloomy, and I confess that at times it seemed to be hope deferred. However, I have confidence in Mr. Reynolds, and from my knowledge of him I have been willing to maintain my connection with the mine, and to increase my interest in it from time to time. I am not a very large shareholder, but I am holding to-day considerably more than I have previously held. (Cheers.) I think now my views of the mine are very much altered to what they were previously. I held on simply buoyed up by hope, my expectations were not very great, but I felt that the calamity would not be over bearing if it did not turn out as I hoped. But hope has now given way to expectation from the reports we have received month by month, and from the conversations we have had with Capt. Vivian. I place very great confidence in Captain Vivian's reports, and I place equal confidence in Captain Vivian's honour. (Hear, hear.) All the intercourse I have had with him has led me to suppose that he is a straightforward, honest, and judicious gentleman, working this mine, in his judgment, to the best advantage, and equally I have the greatest confidence in his honesty. (Cheers.) I believe that we are very much, as most other mining companies are, dependent upon the judgment of the captain of the mine. In our captain I have the greatest confidence, and as the mine is going on improving, and the prospects are encouraging, it would be very bad policy now to cripple Captain Vivian for the want of a little funds. I have heard from him to-day that this call might, indeed, be dispensed with, and that it would be possible to work the mine for another four months; but that would not be fairly working the mine, but taking away future profits, and also be paying dearly for it; but by opening up the mine in the way we propose to do we could get at the contents at one-third less cost than if worked in what we consider an unfair way. With respect to the increased stamping power, we cannot do better than provide improved facilities and increased power for carrying on those operations, which, with the labour employed, will involve a call of 2*s.* per share. It is very gratifying to us as a committee to find that the shareholders have sufficient confidence in us, as a committee, to pay up their calls so well. I understand there is not a shilling owing. I think I am right, Mr. Reynolds?

The CHAIRMAN: Quite right.

Mr. BUDD went on to say that the call would not be a pressing one, and he was sure that, after what they had heard, they would all agree in the desirability of making that call. He, therefore, moved that a call of 2*s.* per share be made to provide for the working of the mine, including the providing of this additional stamping power for the next four months.

Mr. BOWMAN (Southampton) seconded the resolution, which was put, and carried unanimously.

On the motion of Mr. SCOTT, seconded by Capt. VIVIAN, the following gentlemen were elected members of the committee:—Messrs. T. Bowman, G. Budd, S. T. Dutton, F. W. Michell, and J. B. Reynolds.

The CHAIRMAN said the next resolution referred to Lord Falmouth's lease, which will expire shortly. The agent of Lord Falmouth had consented to exchange the old lease for a new one of 21 years, with 1-13th dues, and a minimum rent of 10*l.* It was a very important lease for the company, and the shareholders were greatly indebted to his lordship for the liberal terms offered. He moved that the committee be empowered to accept the proposal of Lord Falmouth by the exchange of the old lease for the new, for 21 years, with 1-13th dues, with a minimum rent of 10*l.*——Mr. BOWMAN seconded the resolution, which was put, and carried.

Mr. SCOTT moved a cordial vote of thanks to the Chairman and committee for the satisfactory results which they had been enabled to place before the shareholders.——Mr. J. J. REYNOLDS seconded the resolution, which was put and carried.

The CHAIRMAN acknowledged the compliment, and said that from all they had heard he was sure they would agree with him in thinking that the expectations which had been held out concerning this property would be realised.

Mr. BUDD also replied on behalf of the committee, and said that everything was managed with the greatest economy and carefulness.

Mr. BOWMAN said there was one very pleasing duty he had to perform, and that was to propose a very hearty vote of thanks to Mr. Reynolds for the ability and courtesy with which he had discharged the duties of Chairman. The success of West Kitty up to the present time was greatly due to Mr. Reynolds, who was always ready to afford the very fullest information regarding the position and prospects of the company. The members of the committee had the greatest confidence in Mr. Reynolds, and he had no doubt everyone of the shareholders had the same. (Cheers.)——Mr. SCOTT seconded the resolution, which was put and carried.

The CHAIRMAN: I can only say I am very happy to see you here to-day. I wish the attendance had been larger, but if any shareholders, however they feel towards the company, will take the trouble to make any enquiries they may like to make concerning the mine and the company all their enquiries of every description shall be promptly answered by return of post. (Cheers.)

The meeting then broke up.

## NORTH BUSY MINING COMPANY.

A four-monthly meeting of the adventurers was held at the account-house on Wednesday,—Mr. TOM MOORE in the chair.

The purser, Mr. THORMAN WOODWARD, read the statement of accounts, from which it appeared that the labour cost for the 16 weeks up to Sept. 25, was 1169*l.*; merchants' bills, 147*l.*; lords' dues, 51*l.*; boiler, 90*l.*; paid to Capt. Trevethan, 75*l.*; miners bank charges, 3*l.*; county adit 9*l.*: making a total of 1845*l.* On the credit side they had a balance from the last account of 146*l.*; tinstone sold, 1160*l.*; black tin, 525*l.*; blende, 25*l.*; mundic, 35*l.*: making a total of 1891*l.*, which left a balance of 47*l.* in favour of the adventurers.

The CHAIRMAN said he had just been looking through the accounts. He expected to find a larger balance, but he found that during the last quarter they had paid for timber 87*l.*, for a boiler 95*l.*, to Capt. Trevethan 75*l.*, for a boiler-house 100*l.*, and also about 200*l.* in connection with the stamps, shedding, and laying out the floors something like 40*l.*, which amounted to an outlay of nearly 600*l.* on exceptional works, which would not have to be charged again, as it had all been charged in the present accounts. This altered matters very much. It was usual to make calls to pay for these things, but they had paid it out of revenue. They had sold ore to the amount of 1891*l.* since the last meeting, and had they not paid for this extra machinery, &c., they would have had a very respectable balance.

Capt. C. CRAZE remarked that they had sold their tin to the last day, and their accounts were two months behind. They could not have brought up the last month's coal, but altogether it would show a difference of 400*l.*

The CHAIRMAN said, on the other hand, they had purchased the stamps in the summer, and owing to the scarcity of the water they could make no returns for the time, although they had men working there. If they had had water they could have returned the tin with much more advantage to themselves and shown a better profit.

In reply to Mr. G. M. CARTER, Capt PRISK said the stamps were in position, and they would be able to return the whole of their tin in the course of six weeks or so.

Mr. R. F. MICHELL said it was rather a new thing to him to find a mine started and pay everything out of their returns without making a call, and he would ask whether the manager could give them any idea as to what might be considered the cost of the engine-boiler, engine-house, shears, sinking the engine-shaft, putting down the pit work, as well as the 200*l.* laid out for the stamps—work that in every young mine that he had been connected with for the last 25 years, had been paid for out of calls. Even in great mines this had always been so in his experience, but this was a very notable exception. (Applause.)——Capt. PRISK said he had not made up the figures, but he should think the cost had been at least from 1000*l.* to 1200*l.*——Mr MICHELL: Then, in other words, the mine had made that amount of profit?——Captain CRAZE remarked that might be so; but would it be so if the costs were all up to that date.——Captain NANCARROW: Name the mine where it has been done.

The CHAIRMAN said he should like to know if the accounts presented that day were in any way different from the usual way of presenting them. He knew one of the largest mines in the county where the merchants' bills were not presented for 12 months. He did not agree with that, but was in favour of charging the costs as close up as possible, and showing the balance, whatever it might be; but seeing that this was the commencement of a new concern, and they had to make an outlay before any profit could be made, and that they were in a position to show a profit on the returning of their tinstuff, he thought the statement of accounts was a very fair one. They did not wish to keep anything back, but to state fully their affairs, and he thought, as far as they had gone, they had been the admiration and envy of a great many people. (Applause.)

Capt. CRAZE said that his object in putting the question to the meeting was just to show that it would have been better to make a call in order to work the mine, as it should have been worked, to the best interests of the shareholders eventually.

The CHAIRMAN said they must refer that matter back to the shareholders who meet at the last meeting, who, if they thought fit, could have made a call, but who, in their wisdom and common sense, thought a call was unnecessary, and the report that day proved that it was unnecessary. (Applause.)——Capt. CRAZE: Future shareholders may have to pay the call.

Mr. CARTER remarked that he believed the accounts were only one month behind, and that being the case they were in a fine position. He complained of the interference with the working of the mine, by so many inspectors being sent to inspect the mine every day on behalf of the shareholders.——The CHAIRMAN said this matter had engaged the attention of the committee, and a resolution would be proposed upon it.

Captain JAMES said one very striking feature in the accounts, compared with many other mines in the county, was that everything had been charged up within one month. There were many large and important mines in the county, and most produotive mines, where the labour costs were in arrear three months, and the merchants' bills six months. (Very true.) They found that the last pay was on Saturday last, which was simply three days from that time, and it was impossible to get that pay into these accounts, because there were so many things to go through, and it was quite unnecessary to do it. He very much questioned, seeing the work the purser had to do in the registration of the transfer of shares, that he could have got through the work at all. It was only necessary to have held the meeting a week earlier to show that nothing whatever had been omitted that could have been charged. North Busy was in as good a position, financially, as the best mines in Cornwall, and the second-class mines could bear no comparison to it. (Applause.)

The agents, Captains Prisk and James, submitted a very satisfactory report, which they wound up by saying that they hoped to intersect the lode at the engine-shaft in about six weeks from this time, and open upon it east and west, and they saw no reason why they should not keep up the returns for the next 16 weeks as they had done in the past.

In reply to Captain CRAZE, Captain PRISK said there were from 4 to 5 fms. of ground to be taken away above the 10 fm. level.——Captain CRAZE quite disagreed with that.——Captain PRISK said that did not alter his opinion.——Mr. CARTER asked how long they would be before they opened the 20 fm. level.——Captain PRISK: About six weeks.——Mr. CARTER said they had another 12 fms. to take away, and that they were in a position to keep up their returns in high and dry ground between that and the sinking of the next level.——Captain PRISK: I see no reason why.——Mr. CARTER: Therefore I see no reason in the question asked by Captain Craze.——Mr. MICHELL: He may have an object in asking it.

On the motion of Mr. CROUCH, Fenzance, seconded by Captain JAMES, the accounts were adopted unanimously.——Mr. FARLEY suggested that they should have a working plan of the mine, and Captain PRISK said they intended to have one by the next meeting.

The CHAIRMAN said when the purser of that mine was engaged it was a very small affair as far as the transfers were concerned, but he found that during the past quarter he had received 1471 transfers, representing 23,000 shares, which meant that the mine had changed hands four times over; and he would ask them whether 5*l.* 5*s.* a month was sufficient for a purser and a clerk to do that work? ("No, no!")——On the motion of Captain A. JAMES, seconded by Mr. FARLEY, and carried unanimously, the salary of the purser was increased to 7*l.* 7*s.* per month, until it was seen what the 20 fm. level would turn out.

Mr. WOODWARD returned thanks, and said he would, as hitherto, do his best to help on the company.

On the suggestion of Mr. MICHELL, and on the motion of Mr. WEBBER, seconded by Captain CRAZE, the salary of Captain James, the agent, was increased from 8*l.* 8*s.* per month to 10*l.* 10*s.*——Captain TREVETHAN suggested that the wages of the night agent, Captain Cockin, should also be increased, he having now only 5*l.* 5*s.* per month. This matter was left in the hands of the executive, as is customary.——The CHAIRMAN said that, seeing that the agents and men had been greatly hindered in the working of the mine by so many agents sent to inspect the mine, it was for them to say whether they would allow in future all parties to come and go down the mine just as they liked. It had been suggested that two days in the month should be set apart for inspection—that was once a fortnight. (Several voices cried out, "Once a week!")——Captain PRISK said they got from two to half-a-dozen a day coming to inspect the mine, and the men complained that they could not get a living, having to remove their tools so frequently for these inspections.

Mr. FARLEY, Capt. JAMES, and others, spoke in favour of one day a week, seeing that this was a young mine, and it was eventually agreed unanimously, on the motion of Captain JAMES, that the days and hours of inspection should be limited to the Wednesday in every week, from nine to twelve o'clock. Nobody to go down later than that.

On the motion of Mr. WICKETT, a vote of thanks was passed to the temporary committee who were appointed at the last meeting to assist the agents, and whose term of office now expired. Several adventurers expressed themselves against a permanent committee, and amongst them were two members of the committee, especially in a young mine like that, now that it had been properly started.——The motion was was carried unanimously, and the CHAIRMAN acknowledged the vote.

A vote of thanks to the Chairman brought the business to a close.

The adventurers afterwards dined together, and the leading toast after dinner was "Success to the Mine," after which Mr. WEBBER, who had taken a great interest in the mine nine months ago, responded.

Captain PRISK said that during that nine months they had done a great deal of work. They had to sink an engine-shaft, put up an engine, and all the necessary work had been carried out, and he was happy to say they were in fair position that day. As soon as they were down to the next level they would be in a position to say that they had 10 fms. on the back of a good lode of tin, and he did not see why they should not have as good a level at the next as at the 10. They had there a lode valued at one time at 40*l.* per fathom, and at another time worth 60*l.* per fm. It was changeable, and they did not report it. It was now valued at 20*l.*, but he hoped it would soon again be worth 40*l.* The average value, accordding to their sales, had been 20*l.* He saw no reason why they should not do as well in the next four months, if not better, than the last.

Capt. A. JAMES, in responding to "A better price for tin," said he still believed that North Busy was destined to be a famous mine, and would be a favourite with those who dealt in it, and would establish itself as a marketable and valuable mine. The shares had crept up to 2*l.* each, and then to 4*l.*, and if he had known it early enough he might have done much better for himself than he had. They should consider what it had done within a very limited period, and if they could show him another mine that had done anything like it he would be glad. He had never seen a young mine that had done so well. He could hardly believe that the work done there had cost less than 1800*l.*, and this had all been paid out of the returns of the mine.

The health of the purser was cordially drunk, and he briefly responded. Dr. WHITWORTH also responded to the toast of his health as the mine doctor, and, in replying, said he had always had great faith in the property.

Mr. CARTER, in responding to the toast of his health, said he had gone down the mine, and he was so favourably impressed with it that he now held 315 shares in it. He strongly deprecated the knocking down of the price of shares without any apparent reason, and said it was very discouraging to cutside shareholders.

Captain MANCARROW, in responding for the ex-managers of the county, said no other mine in the county had done what North Busy had done without a call, and she had given two or three dividends besides. He never could find his heart to cry other people's property down, and he had been very sorry to see that during the last four or five days it had been stated that they would only have 10 tons of tin more from the mine. He did not believe that; they had a far better mine in North Busy than many would wish it to be. If the 20 fm. level cut as good as the 10 fm. level, they were on the eve of dividends.

Captain TREVETHAN said when they had got a lode 300 fms. long, and every athom of the distance would show mineral, they might say they had got a property well worthy of speculating in, and if they did not feel it worth speculating in he would take it and go on again himself. (Laughter, cheers, and "Well done!")——Captain CRAZE defended himself against some remarks which had been thrown out in reference to depreciating the value of the mine, and said time would tell whether what he had reported to his clients was true. He wished to be honest and straightforward. He had found on his last inspection that the points were not so rich as they were on his former inspection.

Several other toasts followed, including the health of the Chairman, and the Press; and the meeting was, altogether, a very satisfactory one.

## GENERAL MINING ASSOCIATION.

The ordinary general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Friday, Nov. 19,

Col. E. W. SCOVELL in the chair.

Mr. C. G. SWANN (the secretary) read the notice convening the meeting and the minutes of the preceeding one, which were confirmed.

The CHAIRMAN said these autumnal half-yearly meetings were held in compliance with their Articles of Association, but there was really no actual business to be submitted to the shareholders on that occasion; but he would endeavour shortly to state to them the position of the association with regard to their sales, and the effects which it was expected would result at the end of the season. They would he was sure remember the severity of last year's winter, and would not, therefore, be surprised to hear that the navigation on the other side of the Atlantic—in the Gulf of St. Laurence—was unprecedentedly delayed; in fact, he might say that their shipments had scarcely commenced earlier than June 1. Taking this into consideration, they would not be surprised that the directors were not in a position upon one months's operations to offer them an interim dividend for the six months ending June 30 last; and, in fact, the directors must be very sure of their position at any time (as the accounts were only made up once a year) to anticipate the profits by offering the shareholders an interim dividend. Upon that occasion, therefore, he had not even the pleasure of recommending any division of profits, but he hoped to be able to do so at the end of the year, for the sales and shipments though they had been delayed, had not, on the whole, been comparatively unsatisfactory up to the present date. They soon overtook the arrears of sales after the long winter, and at the present time they were some 25,000 tons in advance of their sales at the corresponding period of last year. They had in the course of one or two months shipped a greater amount of coal than they had ever shipped in a month before—that was in the month of September, and even in the month of October, which was a very good month last year, they kept up the output in the same proportion, so that at the end of the month their shipments showed an increase of 26 or 27 per cent. over those of the corresponding period of last year. This comprised the sales at Sydney up to the 17th inst., and at Lingan only to Oct. 31; but they then had several orders in hand, and there was every reason to hope that the sales would continue at the latter mine. At Sydney the increase had been 19,500 tons; and at Lingan 14,500 tons. The increase at Sydney was principally due to the large sales of bunker coal they had made to steamers; but there was no doubt that the trade was increasing at the present prices. In order to obtain this increased sale they had to reduce their prices, for the purpose of meeting the keen competition they had been subjected to. The steamers which had coaled with them were not only those which navigate the St. Lawrence up and down to Quebec and Montreal, but they had had a great influx from foreign parts, such as Savannah, New Orleans, Cuba, and other ports in America. The low prices had, he believed, attracted these vessels to their harbour, and it was hoped that they would be able to keep up this trade, even if they were not enabled to get better prices for the coal. At Lingan the sales had amounted to 21,500 tons, against 7000 tons at the corresponding date of last year, and here the shipments had chiefly been to St. John's, New Brunswick, and New Brunswick generally; but to obtain that increase they had, as in the case of Lingan, to submit to very low prices. Their object had been to make the coal better known in New Brunswick. What the total results of the year's operations would be it would be impossible to say at that moment, as so much depended on the latter part of the year. The receipts and expenditure at the mines, especially at Sydney, scarcely balanced themselves until the month of August or September—in the latter month this year—and it was only then that they began to make their profits. Of course, the longer they could keep their period of profitable trade open the better would it be for the shareholders, seeing that they had shipped 122,000 tons in all, he thought that that was quite as much as they shipped during the whole of the season last year; so that even if the navigation should close very early this year—of which, unfortunately, they had some forecast in this country—they would still, he thought, have as good a sale as they had last year. The final result would, of course, depend on the final closing of the accounts. They had endeavoured, as they always had, to reduce the expenditure as much as possible on the other side, so as to meet the low prices by every economy that could be prudently introduced. The shipments from this country, of course, continued to operate against any rise in prices, and while coal remained so low on this side these shipments would be made, more especially as the coal was frequently carried out as ballast, and they could not hope for any great increase in price until there was some advance in this country, and whether there was any prospect of that the shareholders must be as good judges as he was. With regard to the Springhill Company, with whom they were connected, as they were aware, though the association would not participate in their earnings or profits until next year, he might say that they had been doing as far as they knew a better trade than last year. They did not at present get regular returns from the Springhill Company, but he hoped when they participated more fully in the operations of the company that they would get monthly returns from them. At the date of the last advices from the Springhill Company they had sold 35,500 tons more coal than at the corresponding period of last year, the increase being at the rate of nearly 30 per cent., and he believed there was every prospect that the increase would be maintained to the end of the season, as they had contracts in hand; but they, like the association, had to submit to a slight reduction in prices. There was, he believed, no doubt that the Springhill Company was doing a fair amount of business, and that the instalments due to this company at the end of the year would be paid. During the season Mr. Swann (the secretary) had made his usual visit to the mines in Nova Scotia, with the same satisfactory results that he (the Chairman) had been able to speak of with regard to his previous visits. This year Mr. Swann had devoted a good deal of attention to the accounts at the Sydney and Lingan Mines in going into every item of expenditure with the manager, and had, it was hoped, by that investigation and by instituting a better monthly return to the directors, not only instilled into the manager and all about the mines the necessity for the strictest economy, but had enabled the board on his return to hold a closer and more direct check on the expenditure in the monthly accounts. He hoped the shareholders would consider that as satisfactory a statement as could have been expected, remembering the recent history of the trade. It was one satisfaction to them to have arrived at their present position without any loss of life or serious accident. He (the Chairman) then referred to the terrible accident which had taken place at the Albion Mine (which the association some years ago sold to the Halifax Company), by which between 40 and 50 persons lost their lives, and said he was sure the shareholders would join the board in making such a subscription towards the fund for the relief of the sufferers by this catastrophe as they did in the case of the Drummond accident. The directors proposed to subscribe a like amount in this case. He (the Chairman) also referred in feeling terms to the loss which the association has sustained by the sudden death of their excellent correspondent and representative, Mr. Morrow, of the firm of Cunard and Morrow, who have had the management of the affairs of the association for between 20 and 30 years. The board had recorded on their minutes their deep sense of the loss sustained by the association, and their appreciation of the valuable services that Mr. Morrow had for so long a period rendered to the association, and he was quite sure that the shareholders would wish to

oin in this expression of regret and sympathy that the board had conveyed through his remaining partner to his bereaved widow and family. Hear, hear.)

Mr. RUDING asked whether the increased sale of coals would probably make up for the reduction in prices to which they had had to submit?——The CHAIRMAN replied that it was difficult at this period to say what the final results of the season's operations would be; but if they shipped as much coal during the remainder of the season as they did last year he thought they would not be far behind last year's results, even if they were not better.

The SECRETARY stated that they had had 70 steamers coaling with them this year as against 45 last year.

On the motion of Mr. RUDING, seconded by Mr. BRIDGE, a vote was passed expressive of their regret at the loss sustained by the association by the death of Mr. Morrow.

The meeting then closed with a vote of thanks to the Chairman and directors.

## SOUTH WHEAL CREBOR MINING COMPANY.

The first annual meeting of this company since its inauguration was held at the Queen's Head Hotel, Tavistock, on Wednesday,—Mr. JOHN KNIGHT presided, in the absence, through indisposition, of Mr. Thornton (Chairman of the company), and the other members present were Capt. Gilbert and Messrs. G. Beckingsale, A. Endean, J. Coates, G. Prout, J. Smith (secretary), and J. Goldsworthy (agent).

The agent's report, which was taken as read, having stated that a quantity of work had been done on surface, went on to say that the engine-shaft had been sunk below the 16 fm. level, or 26 fms. below surface, 10 fms. 2 ft., the first 4½ fms. being through elvan of a hard description, which rendered the progress exceedingly slow. However, the last 5 fms. 5 ft. had been in killas of a high mineral character, and as the shaft was deepened towards the main lode the character of the stratum continued to improve. Judging from the underlie of the lode in the 16 fm. level there were about 8 fms. more to sink to reach the same, where they might fairly expect a most important discovery. It was hoped to meet with the lode in less than three months. The 16 fm. level had been extended north-east 48 fms. towards the east and west lode; through this drivage the caunter lode had produced some good copper and silver ores, and in places opened some tribute ground. As in the eastern mine, across the river, the lode was to the north of the elvan in killas, and they had not as yet driven through the elvan; they did not expect the east and west lode before getting clear of the lode and into the killas. The 16, south-west on the caunter lode, had been extended 3 fms. 2 ft., and was 3 ft. wide, composed of capel, quartz, prian, mundic, and copper ore, producing of the latter 3 tons per fathom, with indications of an early improvement. They expected in a few days to intersect an east and west lode, where great and lasting results might be fairly anticipated.

The statements of accounts was also taken as read, and in answer to Mr. ENDEAN, it was stated that the unissued capital was about 18,000*l*.

Mr. BECKINGSALE understood that application was about to be made for the whole of this capital, but he thought the directors ought to give the shareholders a chance of obtaining some of it, instead of allowing dealers and brokers to manipulate it as they liked. Having touched on one or two points alluded to in the agent's report, the speaker asked Capt. Goldsworthy why he anticipated they were going to realise lasting results; 18,000*l*. was a large amount of unissued capital. If the mine was what it was reported to be, it would not only soon pay its way but return good compensation for the capital expended upon it.

The CHAIRMAN thought it would be desirable before long to give the shareholders the option of taking up the other shares of the company, so as to place the company in a position to pay what was necessary for plant on the mine. The necessary plant on the mine would cost about 1,000*l*. If they only realised Capt. Goldsworthy's anticipations they would not require much more capital to place them in a first-rate position.

Capt. GOLDSWORTHY spoke in very encouraging terms of the future prospects of the mine, and gave satisfactory reasons for the conclusions he had embodied in his report, and concluded by saying that, taking the indications of the mine into account, he did not know of another mine with such bright prospects as South Crebor.——The CHAIRMAN expressed the surprise he felt on descending the mine to see how rich it appeared in copper, which was literally oozing out.

Capt. GOLDSWORTHY said Capt. Vivian had declared he had never seen so much copper ooze from a mine in his life.

Mr. ENDEAN said he had sent Capt Vivian to inspect the mine, and his report was exceedingly satisfactory.——The CHAIRMAN remarked that it was no doubt a good paying property, and their desire was to work it as legitimately as possible.——The report and statement of accounts were unanimously adopted.

Mr. BECKINGSALE proposed that Mr. M. J. Salmon be re-elected auditor, and observed that Mr. Salmon was a gentleman well acquainted with accounts, and thoroughly straightforward.——This was seconded by Mr. ENDEAN and carried unanimously.——It was unanimously resolved that Capt. Gilbert be a director of the company, and all the gentleman present expressed pleasure at seeing the services of such a practical gentleman on the board, Mr. ENDEAN observing that Capt. Gilbert would prove to the directors a very able coadjutor. (Hear, hear.)

Capt. GILBERT briefly returned thanks, and expressed a hope that he should be able to discharge his duties to the satisfaction of the company.

It was resolved that the next general meeting should be held as soon after Oct. 31 as possible,

Mr. ENDEAN, in proposing that the directors remuneration should be raised from 100*l*. to 200*l*., observed that those gentlemen received all the kicks and very few of the halfpence until they returned dividends to the shareholders. He, therefore, thought they ought to receive increased compensation for their labours as the mine progressed.——Mr. COATES seconded the proposition, which was carried.

The CHAIRMAN briefly returned thanks, and said whatever the directors were paid it would be their aim to do their best in the interests of the mine for the benefit of the shareholders.

Mr. BECKINGSALE proposed a vote of thanks to the directors and the other officers for their services during the past year, and eulogised the manner in which they had all managed the affairs of the company. He expressed much regret, which was shared by the other gentlemen present, at the absence of the Hon. J. M. Erskine and Mr. Thornton through indisposition. Capt. Goldsworthy's report was such a wonderful one to be produced for the first year, that he felt it was almost too good to be true. It was something like finding an El Dorado around the hills of Tavistock, and he hoped that an El Dorado would be the result. He congratulated the company on having such honest, straightforward, and able servants. (Applause.)

Mr. COATES seconded the vote of thanks, and said he was glad it included the name of Capt. Goldsworthy, otherwise he had intended to propose a separate vote of thanks to him for the energy and ability he had displayed in opening up the mine. (Hear, hear.) He then referred in eulogistic terms to the directors and other officers.

Mr. ENDEAN supported the motion in a few appropriate observations, and it was carried *nem. con.*

The CHAIRMAN, the SECRETARY, and the AGENT each responded, and the meeting terminated.

## COPIAPO MINING COMPANY.

The ordinary general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Thursday,

Mr. J. DUNNINGTON FLETCHER in the chair.

Mr. RALPH S. ARCHBOLD (the secretary) read the notice convening the meeting, and the directors' report.

The CHAIRMAN said: I am pleased to see so goodly an attendance to-day. For the nearly 20 years that I have been connected with this company as one of its directors our meetings have been but very small. The room in which the board usually hold their meetings has been quite sufficient to contain all who attended. This is the first time in which we have been able to call in the aid of a larger room. It shows that the general public are beginning to appreciate what this company is. I believe this time last year the number of shareholders was not more than 50 or 60—to-day the number is 213. The company has been established 50 years, and some among you may know but little about the real state of the property, what it is and where it is. (A laugh.) It is situated in the most northern province of Chili—Copiapo. Our principal mines are about 30 miles from the port of Caldaro, and the landed property belonging to the company, about 13 miles in extent, runs on both sides of the River Copiapo. You may wonder what was the meaning originally of this land being bought, or why it was necessary to have it. When this company was established the Copiapo and Caldaro Railway was not in existence, and in order to get ores to the ports it was absolutely necessary to have mule carriage. Consequently it was necessary to have a large amount of pasture for the mules, and that is the reason we own this large extent of landed property. That landed property, beyond the revenue it brings us, is of no real value. The profits from it this year have amounted to the sum of 2000*l*. There was a time about ten years since when the directors had an offer of about 40,000*l*. for this property, but the terms of payment were not acceptable. If any similar offer should ever occur the directors would entertain it for the reasons stated. As regards the mines themselves (to come to the report), I may tell you that it is within the last six months that the large profits which you see coming to our credit have been realised. The price of copper during six months of the past year was higher than it is now, but the returns were not so good. Within the last six months profits have increased, and even during the last two months they are still better. In the former period the rate of exchange was also against us. For the month of July the profits were, I think, $11,000 and $18,000 for the last month of which we have news (August)—1300*l*. and 2000*l*. respectively. Should these profits continue, I need hardly tell you that the shareholders may foresee an interim dividend in the early part of next year. As regards the Checo Mine that originally was the best, and there was also the silver mine of Alfin-hallada. These were the two mines from which the great profits were derived, and which, before I was connected with the company, raised the price of the shares to 50*l*. at one time. I believe there are many still connected with us who bought in as high as 26*l*. The Checo Mine has been worked out. At present under the superintendence of Mr. Hall some expense is being incurrred upon it, which we hope will lead to a good result. Of the present silver mine we are working, I can say nothing more than you see in the report. The estate has produced a better profit than usual, owing to there having been a plentiful supply of rain. I have now to allude to the subdivision of the shares. A notice was sent out to the shareholders asking for their opinion, and we have received an assent from 62, holding 2956 shares, in favour of the subdivision. five shareholders holding 528 shares—about a twentieth of the whole—are against the subdivision: 145, holding 6076, had not replied, and we may assume that they are indifferent, and would agree to it. Under these circumstances, the directors think that they will be justified in taking the necessary steps for carrying out a scheme of subdivision. Two meetings will be necessary to pass a special resolution, and you will receive due notice of it. The directors have received a petition requesting that Mr. Schofield, of the Stock Exchange, may be placed on the board of direction. There are five directors, and having brought the company to a good position, feel that they are perfectly able to manage it; and unless the shareholders express a very decided opinion that it is necessary to add to the board, we do not see why any new director should be put on in the way that Mr. Schofield now proposes. Against him personally we, of course, have not the slightest objection; but he has only been a shareholder since Feb. 4, although he is a very large shareholder now. And supposing the shareholders, as a body, should say it is necessary to add another director, I cannot say that we think Mr. Schofield would be the proper man, and for this reason—that from his very occupation and position he must be a large dealer in the shares; and whether a large dealer in the shares ought to be in the position of a director is a matter on which the directors certainly have a very strong opinion. It, however, remains for the shareholders to express their opinion. In conclusion, the Chairman moved the adoption of the report.

Mr. BLADON, while wishing to leave the board unfettered with respect to the sub-division of the shares, suggested several reasons why the denomination should not be more nor less than 5*l*.

Mr. SCHOFIELD thought the increase in the number of shareholders from 60 to 213 was entirely owing to him, and he was also the first mover with regard to the sub-division of the shares, for as at present constituted the shares were almost unmarketable. He thought it would be desirable that the shares should be of 4*l*., like the Panulcillo shares—that company having a property in the same country, and carrying on the same business as them. However, if the meeting wished the shares to be 5*l*. he would be agreeable.

The CHAIRMAN remarked the directors were quite in different on the matter.

Mr. BLADON said that with 5*l*. shares the liability would be 15s. each, and, in proportion to the present price, the then price would be 3¼.

The CHAIRMAN in reply to the suggestion of a shareholder that the directors should send out a monthly post-card, that the reports were published regularly in the *Mining Journal* and Mining World; but the matter would be taken into consideration. The directors were so unused to finding themselves in funds that thay hardly yet knew how to do anything that required money, and they required a few hints on the subject. (Laughter.)

Mr. SCHOFIELD asked what was the opinion of the board on the last accounts?——The CHAIRMAN replied that they considered them more satisfactory than any they had yet received. They were in every way satisfied with their superintendent.

Mr. BLADON seconded the motion for the adoption of the report, which was carried unanimously.

The CHAIRMAN moved—"That in addition to the interim dividend of 5s. per share paid on July 19 last, a further dividend of 5s. per share, making 10s. per share, out of the net profits of the year be now declared, payable to the registered shareholders at this date on Dec. 15.——Mr. SCHOFIELD seconded the motion, which was carried unanimously.

The retiring directors, Messrs. J. Dunnington Fletcher and T. K. Weir were re-elected; and Mr. WEIR stated that some Australian ore had just been sold at 12s. 3d. per unit.

The auditors, Messrs. Cooper Brothers and Co. and Mr. W. F. Moore were also re-appointed.

Mr. BLADON then proposed that the shares should be sub-divided, from 20*l*. to 5*l*. each.

The solicitor (Mr. FRESHFIELD) said the matter could only be put as an expression of opinion on the part of the meeting.

Mr. SCHOFIELD seconded the proposition, which was carried by a majority of 2—12 to 10—the minority voting for a sub-division, from 20*l*. to 2*l*. per share.

The CHAIRMAN remarked that the matter would shortly be formally brought before the shareholders, when a fuller expression of opinion would be forthcoming.

Mr. SCHOFIELD said that as the directors had raised an objection to his candidature he would withdraw it; but although he was a jobber he hoped he would never be guilty of conduct so unworthy as to take advantage of his position as a director in dealing with the company's shares.

A vote of thanks having been passed to the Chairman and directors, the meeting closed.

## HUNGARIAN COPPER COMPANY

The first general meeting of shareholders was held on Saturday, at the offices of the company, 5, Copthall Buildings.

Mr. H. L. PHILLIPS, F.G.S., in the chair.

The notice convening the meeting was read.

The CHAIRMAN stated that this was simply a formal meeting held in accordance with the Act; but he would take the opportunity of stating that the entire capital was disposed of, and that the board had received information to the effect that the transfer of the various properties was satisfactorily completed, and that no time would be lost in proceeding with their active development. There was but one opinion in regard to the properties, and there was little doubt that the concern would take rank with the best and most productive mines held by English capitalists.

Mr. F. F. POWELL stated that the board had sent the samples brought over by Mr. Evans to Mr. Claudet for analysis, and the result showed that a very large proportion of gold existed in association with the copper, and that this circumstance would materially enhance the market value of their products.

Mr. GUTTIERREZ asked what proportion of gold was contained in the ore?——The CHAIRMAN stated that it might be taken as being over ½ oz. of gold per ton. Some samples produced even more.

A SHAREHOLDER observed that it might be considered a gold mine as well as as a copper mine, and suggested that the title of the company might be altered.

The CHAIRMAN said the association of gold was undoubtedly an element of very considerable value, and it would prove to be such in the working of the property, and as regarded the suggested change of title that was a matter which might be dealt with hereafter.

Mr. F. HUNT said that the actual sales of metal had proved the value of the gold, as the smelters gave an increased price for the copper in accordance with the gold contents.

A SHAREHOLDER remarked that this was a very satisfactory reply, and wished to know what arrangements had been made in regard to the administration.

The CHAIRMAN said that Sir Carl Stoll, an admitted authority in mining matters, and a member of the Hungarian Parliament, had offered his services, and the offer was under consideration by the board. Sir Carl Stoll not only had a practical acquaintance with the property, but had expressed himself in the highest possible terms in reference to it.

Mr. GUTTIERREZ remarked that no better opinion could be given than that expressed by Mr. Evans, whose successful development of the Mona Mines, and whose long practical experience in connection with his position as Her Majesty's Chief Inspector of Mines stamped his expressed opinion on the Hungarian Mines as of great importance. He followed his opinion in Mona by purchasing the shares at 5*l*., and they were in a few months 15*l*.; and now he had taken a large interest in this company, and believed he and his friends would do similarly well with it.

Mr. KERLY, the solicitor, stated that the legal part of the business had been most satisfactorily performed by their able representative, Dr. Remenyi, and he had much pleasure in thus stating it for the information of the meeting.

The meeting then broke up, with the usual compliments to the Chairman.

## WHEAL PRUSSIA AND CARDREW UNITED MINING COMPANY.

The ordinary general meeting of shareholders was held at the mine on Tuesday,—Mr. SAMUEL ABBOTT in the chair.

There was a large attendance, upwards of 3600 shares being represented. The usual preliminaries having been disposed of, the statements of account and the subjoined report of Capt. Jos. Pryor, dated Nov. 29, were submitted:—

Prussia: The lode in the 50 fm. west is about 4 ft. wide, producing tiustuff of a low quality. Having communicated the rise in the back of the 40 fm. level west with the 30 fm. level, we have continued to rise above; it is now up about 5 fms.; lode 4 to 5 ft. wide, producing good stones of tin, but not enough to value. The lode in the 30 fm. level west is 3 to 4 ft. wide, and worth 7*l*. The 30 fm. level, east of Skip shaft, was driven by the former company about 4 fms.; the lode being poor was suspended, but, believing the main part of the lode was standing to the north, we put men to cross-cut in that direction, and I am pleased to say have cut a very good lode, and have driven on its course 2½ fms.; lode in present end worth 10*l*., with a very promising appearance of its continuance. This is an important discovery, it being in whole ground, and directly over the rich deposit of tin worked on by the previous proprietors. When this end is extended far enough we purpose sinking a winze, and thus lay open some rich ground that will well pay for stoping.—Cardrew: Our principal attention has been paid to this part of the property in pushing forward all the necessary buildings, erections, &c., that we might commence pumping the water before the winter sets in. Since the last meeting we have built the loading, &c., for the steam capstan and winding-engine, boiler-house, and stack for same, also built stack and flues, part of boiler-house, and fixed two boilers for the pumping-engine, completed smith's shop, &c., loading and bob-pit for balance-bob, and the masons are now engaged completing the boiler-house. As stated at the last meeting, the engineers were prepared to erect the 70-in. cylinder pumping-engine. Since then they have completed the same, with two boilers attached, also erected the steam capstan ond winding engine, with one boiler, and the both engines are working very satisfactorily. There has been little done in clearing the deep adit, in consequence of the increasing danger to the men, owing to such a quantity of water ahead and above them; we therefore thought it most advisable to suspend operations at this point until the engine was put to work, but as soon as practicable we shall put on a full pare of men about it, and we may discharge the water through it, instead of pumping to surface. As reported last quarter, the engine-shaft was cut down, timbered, &c., to the water, or 42 fms. from surface; but since then, the water having drained a little, advantage was taken of it; a solar fixed, and the shaft cut down 6 or 8 ft. farther, when the water again rose, and continued rising; then we began making preparations for the fixing of the pitwork, so as to be ready to pump as soon as the engine was completed. Knowing that we have to cope with a lot of water before we get to the deep adit level (owing to the choke there), and that a large quantity will, we hope, be eventually wanted at surface for dressing purposes, we decided to put in 14-in. pitwork for the adit lift; this we have done, and the engine being ready, we commenced pumping last Saturday, and have forked the water, cleared the stuff, and taken up the solar referred to above, and began to fork below. Here we find a quantity of debris, which I believe is owing to another solar being left in back of deep adit, so that when this is drained and cleared, I think we shall only have the water to contend with. You will observe from the foregoing that a large amount of dead and costly work has been done, thus occasioning heavy merchants' bills; besides this work we have made sundry alterations to the pumping-engine, attached 38 fms. of 16-in. main rods to same, purchased boilers and fittings, &c., new capstan and winding-engine, wire ropes for ditto, shears, wood and iron work for balance-bob, and have also about 40 fms. of 18-in. pitwork and other materials on the mine, the whole of which are in to-day's accounts, so that our bills for the next meeting will be comparatively nothing. In conclusion, I would remark that the machinery we have erected is fully equal to and quite sufficient for the development of these mines, and that when laid open I have still every reason to believe that we shall have a good and lasting property.

After some discussion, it was resolved that the accounts be allowed and passed; that the salary of the purser be increased to 3*l*. 8s. per month, and that of the manager to 12*l*. 12s.; and that a call of 10s. per 1-6000th share be now made, and that a discount of 5 per cent. be allowed if the same be paid on or before Jan. 1, 1881.

In proposing the health of the manager, Capt. Pryor, Mr. BAIN, as one of the largest shareholders, expressed his unabated confidence in the undertaking, and his appreciation of the services rendered by the executive, and of the energy displayed by Capt. Pryor. This was endorsed by other shareholders present, including several well known mining authorities.——Capt. PRYOR, in replying, gave some interesting details of the returns made by former workers, and alluded to the large extent of unexplored ground in the sett, and the good results that might confidently be expected from its development.——Allusion was also made by the PURSER to the ready response to the last call in July, only 22*l*. 10s. being due out of the 1500*l*.——The engineer, Mr. HOCKING, was complimented on the dispatch made in the erection of the engines, and in reply called the attention of the shareholders to the efficiency of the machinery already erected. ——This mine adjoins Wheal Peevor to the south, and, is no doubt, a valuable property. The shares are principally held by influential local gentlemen, who mean to thoroughly develope the rich lodes known to be in the sett. A large amount has been spent in the erection of a powerful pumping-engine and other valuable plant; and, although the calls have hitherto been heavy, the arrears at the meeting were only 22*l*. 10s.

BEDFORD UNITED.—At the meeting to be held on Thursday the accounts show cash at bankers, 566*l*. 11s. 5d.; a loss on the half-year to end of October of 594*l*. 15s. 11d.; and a total debit balance of 2552*l*. 11s. 9d. The directors' report states that it has been necessary to include in this account seven months cost against six months returns, thereby increasing the loss on the 6 months working. The costs have been considerably increased, owing to the new work requisite for developing the Bridge lode, and athough it has been necessary to ask the shareholders for a further call, as a set off, the value of the plant is materially increased, and very shortly everything will be in full working order for an effective and proper advancement of the interests of the company. A line of rods half-a-mile in length is almost ready to be attached to the water-wheel, and as soon as the further appliances are completed, which will occupy about four weeks, there will be nothing to prevent the continuous sinking of the shaft and laying open this part of the mine with all speed. The north lode is turning out a fair quantity of ore, and with a better produce and higher standard the directors hope at the next meeting to present a more satisfactory balance sheet.

## PROVINCIAL STOCK AND SHARE MARKETS.

CORNISH MINE SHARE MARKET.—Messrs. ABBOTT and WICKETT, stock and share brokers, Redruth (Nov. 25), write:—Only a small business has been transacted during the past week, and there has been but little activity in the market. At Wheal Prussia meeting a call of 10s. per share was made, and a very encouraging report presented. Quotations annexed:—Blue Hills, 3½ to 4; Carn Brea, 97 to 100; Cook's Kitchen, 10¼ to 10½; Dolcoath, 56 to 56½; East Pool, 35¾ to 36¼; Mellanear, 5 to 5½; New Cook's Kitchen, 6½ to 7; North Busy, 2¾ to 2½; Pedn-an-drea, 1⅞ to 2; Pendarves United, 9 to 10; Santa Gertrude, 175 to 180; South Condurrow, 10¾ to 11; South Crofty, 11 to 11½; South Frances, 11¼ to 11¾; Tincroft, 18¾ to 19¼; West Basset, 15½ to 16; West Peevor, 16¾ to 17⅛; West Frances, 11 to 12; West Tolgus, 47 to 50; West Seton, 17 to 19; Wheal Agar, 6 to 6¾; Wheal Basset, 5¼ to 6; Wheal Grenville, 10¼ to 10½; Wheal Kitty, 4¼ to 4½; Wheal Peevor, 28 to 29; Wheal Prussia, 1¾ to 2; Wheal Uny, 4 to 4¼. Quiet market. Tin, 92½.

— Mr. S. J. DAVEY, mine sharedealer, Redruth (Nov. 25), writes:—Prices further improved in our market in the early part of the week, and a fair amount of business has been done, but to-day the market is quiet, and prices are easier. Carn Brea shares rose 8*l*., Dolcoath 20s., East Pool 20s., Tincroft 25s., West Frances 10s., and Wheal Uny 10s. The tin standards were raised 2s. on Saturday. The following are to-days prices:—Blue Hills, 3¾ to 4; Carn Brea, 99 to 100; Cook's Kitchen, 10¼ to 10¾; Dolcoath, 56 to 56½; East Pool, 35¾ to 36¼; Mellanear, 4¾ to 5; New Cook's Kitchen, 7 to 7¼; North Busy, 2¼ to 2½; North Penstruthal, 1½ to 2; Pendarves United, 9 to 10; Penhalls, 1¾ to 2¼; Pedn-an-drea, 1¾ to 2; South Condurrow, 11 to 11¼; South Crofty, 11 to 11½; South Frances, 11¼ to 11¾; Tincroft, 18¾ to 19¼; West Basset, 15½ to 16; West Frances, 11½ to 12; West Kitty, 2¼ to 2¾; West Peevor, 17 to 17½; West Poldice, 3¼ to 3¾; West Tolgus, 47½ to 50; West Seton, 18 to 20; Wheal Agar, 6 to 6¼; Wheal Basset, 5½ to 6; Wheal Comford, 3¼ to 3¾; Wheal Grenville, 10¼ to 10½; Wheal Jane, ⅝ to ¾; Wheal Peevor, 28½ to 29; Wheal Kitty, 4½ to 5; Wheal Prussia, 1¾ to 2; Wheal Sisters, 1¼ to 2; Wheal Uny, 4 to 4¼.

— Mr. J. H. REYNOLDS, stock and share broker, Redruth (Nov. 25), writes:—During the early part of the week a good business was done in all the leading shares. Carn Brea shares advanced to 101, Dolcoath to 57, and East Pool 36⅝, but do not close at their best, tin being little easier. North Busy shares have had a sharp decline, but close better to-day. The following are the closing quotations:—Blue Hills, 3½ to 4; Carn Brea, 99 to 100; Cook's Kitchen, 10¼ to 11; Dolcoath, 56¾ to 56⅝; East Caradon, 2 to 2¼; East Pool, 36 to 37; Gunnislake (Clitters), 3½ to 4; Herodsfoot, 1 to 1¼; Levant, 4 to 6; Marke Valley, 2 to 2¼; Mellanear, 5 to 5½; New Cook's Kitchen, 6½ to 7; North Busy, 2¼ to 2½; North Herodsfoot, 10s. to 15s.; North Levant, 4 to 6; North Penstruthal, 1 to 1¾; Pedn-an-drea, 1¾ to 2; Pendarves United, 9 to 10; Phœnix, 3 to 3¼; Penhalls, 2 to 2½; South Caradon, 60 to 70; South Condurrow, 11 to 11½; South Crofty, 10¾ to 11¼; South Frances, 11¼ to 11¾; Tincroft, 18¾ to 19¼; West Basset, 15½ to 16; West Chiverton, ⅝ to 1; West Frances, 11¾ to 12¼; West Kitty, 2¼ to 2½; West Peevor, 17 to 17½; West Poldice, 3¼ to 3¾; West Seton, 18 to 20; West Tolgus, 50 to 55; Wheal Agar, 6¼ to 6¾; Wheal Basset, 5¾ to 6; Wheal Crebor, 4¼ to 4¾; Wheal Comford, 3¼ to 3¾; Wheal Grenville, 10 to 10¼; Wheal Jane, ⅝ to ¾; Wheal Jewell, ½ to ⅝; Wheal Kitty, 4½ to 5; Wheal Peevor, 28 to 29; Wheal Prussia, 1¾ to 2; Wheal Uny, 4 to 4¼.

— Mr. JOHN CARTER, mine sharedealer, Camborne (Nov. 25), writes:—The market has been steady during the week, and prices improved gradually in sympathy with the rise in tin, but to-day a quieter tone prevails, and quotations are a trifle easier. Carn Brea shares improved to 101, buyers, closing sellers at 100. East Pool shares recovered to 36⅛, Dolcoath shares to 57, but close with sellers at 56¾. North Busy shares declined to 2*l*. 7s. 6d. sellers, on a falling-off in the 10. The tin standards were advanced by the combined smelters on Saturday 2s. per hundredweight—to 88s. and 89s., and by the Penpoll Smelting Company 3s. per hundredweight—to 89s. and 90s. Quotations subjoined:—Blue Hills, 3¾ to 4; Carn Brea, 99 to 100; Cook's Kitchen, 10¾ to 10¾; Dolcoath, 56 to 56½; East Caradon, 1¾ to 2; East Pool, 36 to 36½; Mellanear, 5 to 5½; New Cook's Kitchen, 7 to 7½; North Busy, 2¼ to 2½; Penhalls, 1¾ to 2; Pedn an-drea, 1¾ to 1⅞; South Caradon, 60 to 65; South Condurrow, 11 to 11¼; South Crofty, 10½ to 11½; South Frances, 11½ to 12; Tincroft, 18 to 19; West Basset, 15½ to 16; West Frances, 11⅝ to 12½; West Peevor, 16½ to 17; West Poldice, 3¼ to 3½; West Tolgus, 47½ to 50; West Seton, 17 to 18; Wheal Agar, 6 to 6¾; Wheal Basset, 5½ to 6; Wheal Grenville, 10¼ to 10½; Wheal Jane, 12s. 6d. to 15s.; Wheal Peevor, 28½ to 29½; Wheal Kitty, 4¾ to 4¾; Wheal Uny, 4 to 4½.

— Mr. M. W. BAWDEN, Liskeard (Nov. 25), writes:—The mining market continues firm for tin stock, and most shares are steadily advancing, holders being confident of a permanent rise, and every probability of higher prices in prospective. Carn Brea, Tincroft, and Wheal Uny shares chiefly in demand. At a meeting of North Wheal Busy United Mines, held at the account-house yesterday, the financial statement of accounts showed a balance of 47*l*. 1s. 9d. in favour of the company. Subjoined are the closing prices:—Bedford United, ¾ to ⅞; Carn Brea, 99 to 100; Gunnislake (Clitters), 3½ to 3¾; Cook's Kitchen, 10¾ to 11; Dolcoath, 56½ to 57; Devon Consols, 13 to 13½; Devon United, 1⅞ to 1⅞; Drake Walls, 1¾ to 2; East Caradon, 1½ to 1¾; East Crebor, 1 to 1⅛; East Lovell, 1¾ to 1½; East Pool, 36 to 36⅛; Gawton United, 1¾ to 1¼; Glasgow Caradon, 1⅛ to 1¼; Herodsfoot, ⅞ to 1; Hingston Down, 1¾ to 1⅞; Marke Valley, 1⅞ to 2; Mount Carbis, 2⅛ to 2¾; New West Caradon, ½ to ⅝; North Herodsfoot, ½ to ⅝; Old Gunnislake, ⅜ to ½; Phœnix United, 3 to 3¼; Prince of Wales, ¾ to ⅞; South Caradon, 60 to 62½; South Condurrow, 11 to 11¼; South Crebor, 1½ to 1¾; South Crofty, 11 to 11½; South Devon United, 1½ to 1⅝; South Frances, 11½ to 12; Tincroft, 18 to 18½; West Basset, 15½ to 16; West Caradon, 2 to 2¼; West Frances, 11 to 11½; West Mary Ann, 1 to 1⅛; West Phœnix, 1¾ to 2⅛; West Crebor, ½ to ⅜; West Tolgus, 50 to 51; Wheal Agar, 6½ to 6¾; Wheal Crebor, 4½ to 4¾; Wheal Fortesue, 1¾ to 2; Wheal Grenville, 10 to 10½; Wheal Kitty, 4¾ to 5; Wheal Hony and Trelawny, 2¼ to 2½; Wheal Peevor, 28½ to 29; Wheal Uny, 4 to 4¼.

MANCHESTER.—Messrs. JOSEPH R. and W. P. BAINES, sharebrokers, 13, Queen's Chambers, Market-street (Nov. 25), write:—The markets during the past week have presented a rather irregular appearance, several fluctuations being noticed, but not sufficiently universal to point to any decided general tendency. If anything, however, the tone may be considered all round slightly stronger, though the approach of the year's end operates against much fresh business being entered into except for quickly moving speculative stocks, the market in which continues to be favourably influenced by the value of money, keeping as it does at the low rate at which it has stood for some time, and from which, though feared lately, it does not seem likely to move very soon. The condition of the staple trades of the country does not yet attract surplus capital, and until such a state is entered upon money will be used as at present, and will doubtless remain cheap.

BANKS have been dealt in to a moderate extent, the prices realised being about full rates lately obtained. Though the quotations are very little altered all the changes are for the better. National Provincial are 1, ditto, new, ½, and Union Bank of Manchester, ¼ higher.

INSURANCE shares have attracted a little more attention than of late, though prices where business is recorded do not show any great movement. The variations, however, are rather numerous, and a few are worthy of consideration. Higher—Commercial Union, 2; Liverpool and London and Globe, 13/16; Royal Liverpool, ⅜; Sea, ¼; Lancashire, ½; Lancashire and Yorkshire Accident, ¼; and a few others 1/16 each. Lower—British and Foreign Marine, ¼; Imperial Marine, 3/16; and Maratime, 1/16.

COAL, IRON, &C., AND MINING.—Bolckows and Ebbws, as usual in this market, produce the major portion of the dealings recorded. Prices in Ebbws are slightly better than those realised a week ago, and in Bolckows (12*l*. paid) the same remark applies, whilst the fully-paid shares are the turn easier. Some solitary transactions are marked in Palmerston's Shipbuilding, A, Tredegar, A, Bilbos, and Telegraph Construction and Maintenance. Darlington Iron and West Cumberland have been done two or three times, but at low figures.

COTTON SPINNING AND MANUFACTURING.—Though the market in these shares has been getting slightly firmer almost each day during the past tweek, the amount of business done continues small, owing, doubtless, to the fact buyers do not consider the state of the trade to warrant yet much advance in prices, whilst sellers who can afford to hold (and their number, as we pointed out some time since, is much greater than was the case in the last advance and the one before) believe that with the turn of the year much better figures will be realisable, and they consequently refuse to be tempted by the amounts already established as advances. In cases where shares stand at a long discount some disposition to buy is noticeable, doubtless in the hope that should a general advance take place they will participate to a great extent, irrespective of intrinsic value of the securities; and if these follow their previous performances, the view is not without reason. To-day the market may be described as strong, but not much doing for reasons already sta'ed.

TELEGRAPHS.—The only movement is in Western and Brazilian, in which

large amount of business is reported at advancing figures. The best price of the week is not maintained however, a slight ease from top being marked, but on the week the advance with which they are to be credited is ⅝.——CANALS neglected, only a slight movement unworthy of notice having occurred in Bridgewater.——CORPORATION STOCK, &c., continue to quote full figures, and a rise of ⅛ in Manchester Corporation stock is the only change to record.——MISCELLANEOUS not much doing in. Westheads are ⅛, and Southport Winter Gardens ⅛ higher. Crossley and Sons are enquired for at better figures. Star Paper Mill keep strong at full quotations.

RAILWAYS.—During the week the markets for rails have been inactive, and prices after several fluctuations quite irregularly. The heavy lines are generally firmer, and higher values only are accepted. The firmness of Sheffield ordinary and deferred stocks has not been fully maintained. On the other hand, Brighton, A, have improved 1 from the late depression, while South-Eastern, A, record ½ decline. An amount of business has been done in North British, but compared with last week's figures the price does not show much alteration. The new shares of the Lancashire and Yorkshire and Midland companies have been in active demand, and exhibit further rise. In Canadians a strong "bull" movement has caused a rise in all descriptions, and as the Grand Trunk traffic came out 6400*l.* increase a hopeful view is again taken of the future. Americans have been favourably influenced by New York prices, and report higher values throughout, Eries and Philadelphia and Reading shares being the best.

HULL.—Mr. W. FOWLER SUTTON, stock and share broker, St. Mary's Chambers (Nov. 25), writes:—The railway markets have been steady this week, and stocks generally show improved quotations, though not to an important extent. The heavy lines have been most in favour, their traffics being very good, and evidencing gradually improving trades all over the country. Brighton, A, wear an appearance of having touched the bottom, and on merits must eventually improve. Canadian stocks have been strong to-day, especially Trunks, which company's preferences have to-day touched higher prices than have been seen since very early in the history of the lines. American stocks are good, though Atlantics have not held their best quotation. Local stocks are firm. Hull Banks, 11⅞ to 12; Hull Docks, 87½ to 88; Earle's Shipbuilding, 19 to 19¼; Hull Trams, 9⅛. Others unchanged.

## SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, sharebroker and ironbroker (Nov. 25), writes:—During the past week the market has been very firm, and prices tend upwards. The money market is easier, and although trade seems quiet, it must be kept in mind the comparison is now with a time of abnormal activity last year, and that trade is now in a healthy state, must be considered very encouraging.

In shares of coal, iron, and steel companies the movement for the week comprise advances of 7s. per share on Arniston Coal, 5s. on Ebbw Vale, 3s. 9d. on Steel Company of Scotland, 1s. 6d. on Omoa and Cleland, 1s. on Glasgow Port Washington, and 6d. each on Benhars, Clyde Coal, and Monkland; on the other hand Carntable, Marbella, Scottish Australian, and ditto (new) are each reduced 2s. 6d. per share. The Scotch pig-iron market has been firm. Owing to the scarcity of warrants prices have advanced from 52s. to 53s. The report both from the United States and the various home centres of this trade continue very favourable, although there is nothing very striking to remark. Benhars have been firmer, from 21s. to 24s. Andrew Knowles and Sons are at 11½; Antrim Iron (A), 45s.; Bilbao Iron, 27½; Bilson and Crump, 62s. 6d.; Bolckow, Vaughan, 29; ditto (12*l.* paid), 95s. prem.; Cardiff and Swansea, 40s.; Chatterley Iron, 7¼; Chillington Iron, 80s. to 85s.; Clyde Coal, 73s. to 76s.; Darlington Iron, 14 dis.; Ebbw Vale, 10 to 10½; Great Western Colliery, 50s.; Henry Briggs, A, 10; John Bagnall and Sons, 27s. 6d.; John Brown and Co., 10¾ dis.; Llynvi and Tondu, 6¼; Lofthouse Colliery, 75s.; Marbella, 77s. to 79s.; Mersey Steel, 50s. dis.; Monkland, 36s. 3d. to 37s. 6d.; ditto, preference, 6*l.* 2s. 6d. to 6*l.* 3s. 9d.; Muntz's Metal, 15½; Mwyndy, 45s.; Newport Abercarn, 6¾; Oakham Colliery (preference), 5s.; Omoa and Cleland, 27s. to 29s.; Onllyn and Dulais Colliery, 5; Parkgate Iron, 45s. prem.; Pelsall, 5 dis.; Rhymney, 23½; Sandwell Park Colliery, 16¾; Sheepbridge, 16¾ dis.; Shotts Iron, 75 to 80; South Wales Colliery, 35s.; Steel Company of Scotland, 11½ to 11¾; Teeside (pref.), par; Tredegar, A, 7½; and West Cumberland, 12 dis.

In shares of foreign copper and lead companies, Panulcillos have advanced 10s. 9*l.* per share, and Rio Tinto, 15s., but Huntingtons and Tharsis are each reduced 2s. 6d., and Canadian 6d. Tharsis have been steady all the week at 32*l.* 12s. 6d. to 33*l.* 16s. 3d. The ore returns of the Yorke Peninsula Company this month include 208 tons shipped to England, leaving on hand 564 tons of 15½ per cent., and 4450 tons of low class ores of nearly 5 per cent. Alamillos are at 35s.; Canadian, 33s. to 34s.; Copiapo, 12; English and Australian, 32s. 6d.; Huntington, 62s. to 63s.; Linares, 62; New Quebrada, 5⅞; Pierrefitte (pref.), 7s.; Rio Tinto (5 per cent.), 96½; Virneberg, 30s. to 35s.; and Yorke Peninsula, 5s. to 7s. 6d.

In shares of home mines, business continues very quiet, but prices are firm owing to the upward tendency of the metal markets. Glasgow Caradons are ready at 24s. The West Caradon meeting is to be on Dec. 2. Devon Consols have declared a dividend of 6s. per share. Aberdaunants are at 1s. per share; Asheton, 15s.; Bedford United, 20s.; Bwich United, 42s. 6d.; Bettws-y-Coed, 15s.; Blue Hills, 75s.; Carn Brea, 100; Carn Camborne, 61s. 3d.; D'Eresby Mountain, 40 to 45; Dolcoath, 57; Devon United, 42s. 6d.; East Botallack, 30s.; East Chiverton, 20s. to 25s.; East Buller, 20s.; East Longrake, 20s.; East Caradon, 40s.; Fortescue, 20s. to 30s.; Great Laxey, 19; Grogwinion, 60s. to 65s.; Herodsfoot, 18s. to 19s.; Indian Queen's Consols, 35s. to 45s.; Killifreth, 5s. 6d.; Leadhills, 45s. to 50s.; Lady Ashburton, 25s.; Lady Bertha, 17s. 6d.; Llanrwst, 10s.; Mid-Devon, 5s. 6d.; Mount Carbis, 50s.; New Kitty, 26s. 3d.; North Busy, 65s.; North Molton, 5s. to 10s.; North Penstruthal, 22s. 6d.; New Caradon, 12s. 6d.; Pandora, 1s. to 20s.; Paika Mines Consols, 25s. to 35s.; Pant-y-Mwyn, 20s. to 30s.; Parys Mountain, 20s. to 22s. 6d.; Roman Gravels, 9½; St. Just United, 95s.; South Crebor, 30s. to 35s.; South D'Eresby, 20s.; South Devon United, 20s. to 30s.; South Frances, 11¾; Tamar, 20s. to 30s.; Tincroft, 18½; Tin Hill, 27s.; Van, 17½; West Basset, 16; West Caradon, 30s.; West Chiverton, 20s. to 27s.; West Poldice, 60s.; West Pateley, 20s. to 30s.; West Phœnix, 42s. 6d.; Wheal Coates, 30s.; Wheal Hony, 40s.; Wheal Jane, 10s. to 15s.; Wheal Basset, 5½; Wheal Jewell, 10s. to 15s.; Wheal Kitty, 95s.; Wheal Peevor, 29; Wheal Owles, 7 to 8; and Ystwith, 25s.

In shares of gold and silver mines, there has been less business doing. Richmonds have improved from 15 to 15¼, ½. This week's run is 845,000. The profits at St. John del Rey have been 1700*l.* Almadas are at 9s. to 11s.; Australasian Mines, 5s.; Callao Bis, 22s. 6d.; Colorado, 52s. 6d.; Cedar Creek, 2s. 6d.; Chontales, 4s. to 6s.; Colar Gold, par; Devala-Moyar, 52s. 6d.; Don Pedro, 13s. 9d.; Eberhardt, 52s. 6d.; English Australian, 15s. to 17s. 6d.; Emma, 7s. 6d.; Flagstaff, 38s. 9d.; Frontino, 87s. 6d.; Indian Glenrock, 30s.; Indian Phœnix, 1s. 3d. to 3s. 9d. prem.; Jeypore, 15s. prem.; Mysore 11s. 3d. prem.; Nouveau, 23s. 6d.; Pestarena United, 5s. to 7s. 6d.; Port Phillip, 9s. to 11s.; Rhodes Reef, 2s. prem.; Rio Grande, 47s. 6d.; Rossa Grande, 3s. to 5s.; Ruby, 6¾; Sierra Buttes, 32s. 6d.; South-East Wynaad, 33s. 9d.; South Indian, 40s.; Tacoma, 5s. to 10s.; Tolima, A, 60s.; and Victoria (London), 5s. to 10s.

In shares of oil companies prices have generally improved. Dalmeny and Young's Paraffin are each 5s. per share higher, Broxburn 2s. 6d., Uphall 1s. 3d., and Oakbank 1s.; but Oakbank (new) are 6d. lower. Young's Paraffin opened about 13*l.*, but they since touched 13*l.* 8s. 9d. Runcorn Soap and Alkali, 20s. dis.

In shares of miscellaneous companies business is quiet. Cheshire Salt are at 8; Droitwich Salt, 15s. to 20s.; ditto, pref., 65s.; Earle's Shipbuilding, 15¾ dis.; India Rubber, 17½; Milner's Safe, 9¾; and Zoedone, 32s. 6d. Prices of wagon companies shares are:—Birmingham, 12½; Bristol and South Wales, 6½; Gloucester, 8¼; Metropolitan, 67s. 6d. prem.; Midland, 10; Railway Carriage, 65s.; Sturbruck, 10; Swansea, 50s.; and United States Rolling Stock, 18½ to 19. Prices of chemical companies' shares are—Langdales, 60s.; Lawes', 5⅝ to 5⅞; and Newcastle, 80s.

NORTH MOLTON MINES.—This company has had great difficulty in introducing its ore during the depression prevailing for years past, but some of the large smelters having been induced to give it a thorough trial, have now made offers for it considerably more than the want of sufficient funds enables the concern to undertake for future delivery. Contracts, however, have been concluded for a comparatively large quantity, and sufficient to keep the mines fairly active for a long time to come. Constant work being now ensured, it is most desirable to reduce expenses to the lowest possible point, and this can easily be effected by the aid of only a small amount of working capital. The reserves of ore underground are estimated at 20,000 tons, and as there seems no sign of the deposit of ore being exhausted they can be kept up or augmented by extending the workings to a lower level, by sinking or lengthening out at the present level. Lately they have been sending away about 100 tons per week, and the operations now being carried out will render it possible, by substituting steam for horse power, to easily raise 100 tons per day.

WEST CUMBERLAND IRON AND STEEL COMPANY.—The annual report of this company states they worked large quantities of rails at high prices about this time last year, but owing to an expected advance in the price of ore and other materials, in addition to the advance in wages, the result was a loss of 6s. 7s. per ton. The total loss was 18,480*l.*, of which the collieries contribute 3352*l.*

GLASGOW CARADON COPPER MINING COMPANY (Limited).—The reason why the company is not selling ore as usual this month is owing to a slight breakdown in the whim-engine, which stopped the dressing for a few days. It was, therefore, considered better and more economical instead of sending a small quantity to the sale to have none this month, but to make the December sale as much as two months' sales.

EDINBURGH.—Messrs. THOMAS MILLER and SONS, stock and sharebrokers, Princes-street (Nov. 25) write:—The home railway market has been quiet during the past week, North British being the only stock showing any liveliness, and prices are not much changed. In American and Canadian railways there has been a good business, and prices are for the most part higher. Grand Trunk ordinary has risen from 23¼6 to 24⅛, and the Thirds from 45⅝ to 47 11/16. Readings on the prospect of the accomplishment of the financial scheme have advanced from 23 to 26½. Banks have been well supported. British Linen has risen from 270 to 271, Clydesdale from 210 to 211, Commercial from 235 to 238, and National from 265 to 268; Union has receded from 214 to 213. The tendency of insurance shares has been upwards, and a fair business has been done in that market. The changes in mining and mineral shares are not of much importance, Clyde Coal have risen from 75s. to 75s. 6d., and Glasgow Port Washington from 50s. to 51s.; Huntington Copper have receded from 64s. to 62s. 6d.

WHEAL KIMBERLEY.—After some fifteen years' suspension, old Swanpool Mine, within a mile of Falmouth, was re-started on Monday as Wheal Kimberley. The mine is very shallow, the sett extensive and known to contain several lodes, of which the south or silver-lead lode has been worked on to a considerable extent. On this lode an engine-shaft has been sunk to a depth of 80 fathoms, and several levels have been extended east and west, from which nearly 60,000*l.* worth of silver-lead ore has been raised, the lodes continuing and improving as they get deeper. A cross-cut has been driven 35 fathoms north from the lode at the 50 and has intersected a very promising lode 2½ ft. wide, which it is estimated will produce tin double in value of what it will cost to open the ground. There are two other lodes which can be seen at the adjoining copper mine producing good stones of copper ore, but nothing has been done on these lodes so far as Kimberley Mine is concerned. A cross-cut 12 fathoms north from the engine-shaft will intersect a tin lode, and this gives promise to be a good speculation in itself had there been no other lodes in the sett. There are several thousands of tons of silver-lead ore now discovered that can be brought to the surface at a good profit independently of what may be found after the water is drained. The present sett will include the whole of Swanpool, driving under the cemetery as far as the railway, Carne's Cottages, and Gyllyngvase. It is computed that 15,000*l.* will be ample to bring the mine into a paying state. Lord Kimberley has granted the sett on what are considered liberal terms, and there can be no doubt but the mining operations will be of great importance to Falmouth, Flushing, and the immediate neighbourhood.

MOUNT CARBIS.—This mine is opening well, and is destined to become a great and profitable mine. The tin lode in the deepest part, 27 fms. from surface, produces 50*l.* worth of tin per fathom, and is improving as depth is attained. Independent of this, other lodes are being opened up that are promising to be equally productive and producing rich stones of tin near the surface. This is one of the richest of the mining districts of Cornwall.

## THE WEEK.

SATURDAY, Nov. 20.—There was marked buoyancy in the American market. Notwithstanding the recent heavy rise Illinois Central were again in active demand, advancing 3, to $127. It was rumoured that the directors purpose hereafter declaring quarterly dividends of 2 per cent. Philadelphia and Reading shares touched $25. On Wednesday of this week they changed hands at $21½. The last price for Pennsylvania was $65, and for Erie $46. Home railways rose materially in several instances. Great Western advanced ⅞, Sheffield (A) ⅝, and Berwicks ½. A feature in the mining market was an advance of Rio Tinto shares to 19*l.*

MONDAY.—American shares continue to rise. The advance in New York Central was no less than $4, and the price has now reached $151. Erie went to $46¾. Illinois Central, $127 to $127½; Philadelphia and Reading, $25¼ to $25⅜; Pennsylvania, $56¼ to $56¾. In home railways the principal feature was a rise of 1¼ in York, A, to 132½. In last week's note on the mines of York and Lancaster Company reference to their rich deposits of calamine and sulphate of barytes was overlooked. For some years past the demand for calamine has been increasing, and the supply being limited very remunerative prices can be obtained. Sulphate of barytes is already being sold in sufficient quantity to nearly cover the expenses of the mine. The 1*l.* shares promise to be excellent investment, and deserve attention.

TUESDAY.—Reading shares continued on the rise, and finished at $26½; Erie being $47. After a long period of neglect a little business was done in Atlantic Leased 7s, and the price was quoted 1*l.* better, at 35 to 37. It is understood that Mr. Gowan will shortly meet the Reading shareholders in the City, and submit a full statement us to present prospects. After being indifferently supported most of the day at 157½ and 157¼, Brighton, A, were suddenly after hours elevated to 158¾. To-day's meeting of Hudson Bay proprietors had no effect on the shares, which remain steady at 18. Several of the leading tin shares were quoted better. Panulcilla advanced ¾, to 6*l.* There are strong speculative influences hard at work to lift the price higher.

WEDNESDAY.—Some heavy buying was done in Trunks, especially of the First and Second Preference. The latter rose ¾, to 89¾, and the other 1¾, to 98*l.* It has long been foreseen that the First Preference must, at least, rise to par; it has not much further to rise now to reach that. The Third Preference closed at 47½, and the ordinary stock at 24¼. Timid operators, who selected the latter, have done themselves very little good—must, in fact, have lost money in the majority of cases. In April, for instance, when the First Preference could be secured at 8*l.*, and the Second Preference at 74, the Ordinary was selling at 25 to 25¼. Mexican Railway shares were very strong, particularly the Ordinary, which, opening at 11¼, finished at 12½. The First Preference finished at 25, and the Second at 18.

THURSDAY.—Something like 11 months ago (Dec. 17), in "The Week," when referring to Mexican Railway, we said—"The First Preference now fetch over 17. We have repeatedly recommended their purchase since they were 5. Our last note on this railway was on Oct. 22, when we wrote no time should be lost in securing the Second Preference. Price was then 5, now over 12. The week following we said the First Preference are not too high yet. Price was then but 10. Still higher quotations are looked for." At that time the Ordinary cost little over 5. Good traffics sent up both Trunks and Mexicans. Foreign bonds also improved materially. An important advance was established in Eries.

FRIDAY (*Opening*).—Sellers of New Quebrada can obtain 6¼, which is just 1 above what was possible last Friday. There are not many sellers about, as it is whispered that the French are buying, and that the shares are to be rigged. During a course of seven or ten years one solitary dividend has been scraped together. This was 2s. 6d. per share, and paid in July last. Panulcillo are unaltered at 6¾, and Rio Tinto are 19. Were a similar strong combination formed for Devon Consols or Parys Corporation there would be little difficulty in raising prices to 30*l.* and 5*l.* respectively. North D'Eresby continue to be enquired for, and have now reached 25s. Prince of Wales, ⅝, ⅞: Parys Corporation, 7⅛ to 1½; Wheal Crebor, 4½ to 5. Erie shares have reached $49, and Readings $21. Trunk Ordinary, 24½ to 24¾; First Preference, 96 to 98½; Second Preference, 89½ to 89¾; Third, 47½ to 47¾; Egyptian Unified, 66⅜ to 86⅝. North Eastern have receded to 173⅝; Brighton, A, to 148¼; and Dover, A, to 130¾. Richmond, 15½ to 15¼; Flagstaff, 1¾ to 2; Nouveau Monde, 20s. to 22s. 6d.; Frontino, 4¾ to 4⅝.——*Two o'Clock.*—Sellers of Consols can now obtain 100½ for the account. North British is ½ better, at 90⅝ to 90⅞. Reading shares continue at $27, while Erie are $49½ to $49¾. Colorado, 2⅛ to 2¾; Ruby, 6⅞ to 7⅛; Glenrock, 1⅜ to 1⅝; Great Laxey, 18½ to 19; Devon Consols, 12¾ to 13.——*Four o'Clock.*—Readings have relapsed ⅜; Eries have advanced ⅜. A considerable rise has taken place in Anglo Deferred stock from 32½ to 34½. The preferred is also proportionately higher. Dover, A, now shows no change on the day. Turks are 10⅞ to 11. Newport Abercarn Colliery, 6 to 6½; Great Western Colliery, B. 2 to 2½; Cardiff and Swansea, 1½ to 2.

FERDINAND R. KIRK.

## MARKET ECHOES AND MINING MATTERS.

The confident anticipations of those who declare that tin will reach 100*l.* by the end of the year seem every day nearer their fulfilment, a further advance of about 6*l.* 10s. per ton being all that is now required to establish this much-desired price. With tin at 100*l.* Cornish adventurers would be getting excellent prices for their ores. They should be perfectly satisfied if a steady level of about 60*l.* for black tin could be maintained, as this is a remunerative figure. It is fervently to be hoped that no unhealthy speculation will run up the metal to a quotation which can only be maintained for a brief period, and it has been well said that it is not for the true interests of Cornish mining that tin should be forced up to any fabulous price again. Such a price would bring about its own fall, as every effort would be made abroad to send home largely increased supplies, and the inevitable reaction would probably carry tin down to 70*l.* once more. A fair steady price is all that Cornwall requires, and we think there is every chance of this being attained.

Perhaps one of the most legitimate mining enterprises that has lately come before the public is to be found in West Godolphin—a tin mine which has just been resuscitated with every prospect of success by some of the principal shareholders of Wheal Grenville. The old company, owing chiefly to the unwillingness of the largest shareholders to provide further working capital, abandoned the mine when tin was at its lowest. At that time black tin was not worth more than 30*l.* per ton, but had the shareholders persevered they would now have found their company in very different circumstances. Low as tin was then the mine was making a most trifling monthly loss—in fact, it can hardly be said that any loss was really being made, for the leavings since worked over have yielded a sum which would have been sufficient to have wiped out the monthly deficits and to have left a small profit, and now that black tin is worth about 56*l.* in the market, it will easily be understood why the present proprietary have such strong hopes of early success. As the old company was liquidated the greater part of the plant was broken up and dispersed, but a new engine is immediately to be erected (the pitwork is intact below the 20), and the mine forked without delay. When this is done West Godolphin will be able to tell its own tale. The new company is in 10,000 shares, and the sum of 5000*l.* is in hand for working capital.

The improvement we briefly alluded to last week in North D'Eresby is one which, for importance to the shareholders, can scarcely be over-estimated. The agent of the mine for some time has felt confident that the end in No. 2 adit was approaching a body of lead ore, and last week a marked change came over the lode, which is now yielding some fine lead and blende. The footwall in particular shows a capital course of ore; and, says the agent—"I fully believe we are passing over a large deposit of lead ore at this point, and I am persuaded that with such a fine lode we cannot fail to open up a good mine." We may add that this agent, Capt. R. Vivian, has the reputation of being a very cautious and trustworthy miner; therefore, such a strong statement as the above may well be appreciated by the shareholders. It caused the shares to rise to 25s.

Parys shares have not moved during the past week, but the quotation keeps firm at 20s. to 22s. 6d. Shortly we may expect to hear something good from the cross-cut, as the men who have been squaring the ground where Colonel's shaft was holed, are about to be put to open on one of the good lodes cut through in the 90, but left unworked on account of the want of proper ventilation—a defect now completely remedied. There is a strong feeling that Parys will one day re-assert its name; and although it may never equal the palmy days of the last century, when from 1773 to 1785 "the Mountain" governed the copper market of Europe, producing about 50,000 tons of ore annually, still there is no reason why the lodes under the great open-cast should not yield the shareholders some fine profits before very long.

Great attention has lately been given by mining investors to the Devon Consols district, and though there is nothing like the craze of the years following 1845—the date of the discovery of Devon Consols, when mining setts were secured on every available piece of ground in the proximity of that famous mine—yet mining has lately had a remarkable impulse in this district, and several new companies have appeared. This has been primarily due to the renewed vigour displayed by Devon Consols under its now excellent management, but the present companies base their pretensions for public support upon very different grounds to those which made the companies of a generation ago so signally unlucky. Then the grand idea was the discovery and profitable development of the Devon Consols main lode, and it appeared to be assumed that because an enormous deposit was found to exist in a given spot there must of necessity be other large deposits on the same lode in the immediate proximity, an assumption which is at variance with general mining experience. There are several well-known rich parallel and other lodes in the neighbourhood of Devon Consols, large quantities of copper have been raised from them, and there are excellent chances some of the present companies opening out good productive mines.

The Committee of the Stock Exchange have not confirmed the alteration in the periods of fortnightly settlement, consequently the old arrangements which provide two settlements each calendar month will be retained. There will be, however, as announced last week, three settlements next month at the dates stated.

JAMES H. CROFTS.

## INVESTMENT NOTES.

NORTH D'ERESBY MOUNTAIN.—Our readers will be prepared to learn that the price of these shares has now advanced to 25s. We have constantly urged the purchase at par (20s.), at which price the shares were ridiculously cheap. The mine is opening up in a most satisfactory manner, and our recent visit has confirmed the opinion we have so frequently expressed of the intrinsic merits of the property. If investors were acquainted with the workings of the mine they would be better able to judge of the importance of the improvements as the development progresses. Nothing extravagant has ever been written concerning the mine, but many shares, really not to be compared in value, are selling at double and treble the price. Our desire is to secure a cheap share for investors which will ere long steadily increase in price, and reflect credit on us for recommending it. Such a share, we believe, is North D'Eresby Mountain at 25s. fully-paid. Before a further advance takes place we invite each of our readers to acquire an interest of even the smallest number of shares. We say each of our readers, but if our advice were acted upon we fear some would be disappointed, as it would be impossible to supply the demand. Let those, however, who desire to become shareholders in a cheap and excellent mine at once secure shares at present price. The news to hand is the most satisfactory ever received from the mine. The lode in the No. 2 adit is large, and we do not doubt would be valued by many practical men at 1 ton per fathom. A sample of ore has just been received at the London office; it is one which contains most promising and unmistakable indications of a great deposit of ore, which the manager believes there is beneath, and he is persuaded that with such a fine lode there cannot fail to be a good mine. Such an assertion from a most cautious man, never known to puff or exaggerate, is of vast importance.—ALFRED E. COOKE: 76, Old Broad-street, Nov. 26.

From Mr. JOHN B. REYNOLDS:—Certain progress—nothing to discourage either the investor or the speculator. The firmness of England has caused one element of anxiety in the East to disappear, and firmness on the part of Her Majesty's Government will be alike successful in all directions. But we must not forget that Her Majesty has her Opposition as well as her Government, and the loyal support of that Opposition has greatly assisted Mr. Gladstone. When the right hon. gentleman finds himself in the cold shade of opposition again perhaps he will be more more merciful to his opponents than he was in 1873 and 1879. All sorts of schemes are being started—or, at least, there is an attempt to start them—but their prospects of success are very small. As I have again and again pointed out, the public are becoming more and more alive to the importance of not parting with money before it is clear that there is a chance of a fair return. The more glowing the prospectus the more certain the failure in nineteen cases out of twenty. I grant that 5 per cent. of the companies now being started, probably, will be remunerative. Let us all, therefore, try and find out the 5 per cent. of the Eldorados which will pay. Perhaps we are uncharitable. Still, we cannot but be forgiven for judging concerning the history of the future by the past. What has been the history of the past? Those persons who have experienced the hard fate can answer the question. "Think, British capitalists, before you part with your money, lest after you have parted with it you may never see it again."

"Home industries," those are the watchwords. Let us keep our money in our own country. It will have safe employment there. Do not let India tempt us away, neither let us permit the smiles or the bombast of our cousins across the Atlantic to tempt us; the latter have had enough, and our Indian Empire today has clouds of ominous import hanging over it. At this moment it is a known and acknowledged fact that Cornish mines, after the late ruinous depression, are reviving, and are likely to yield a better return than any other investment which can possibly be selected.

## THE ELECTRIC LIGHT FOR COLLIERIES.

The arguments from time to time put forward to demonstrate that electric illumination was altogether inapplicable in collieries appeared to be in every way justified when considered with regard to the character of the electric light, the known modes of its production, and the amount of outlay involved, not to speak of its unreliability and the great trouble attending its use. But these views must have been very materially modified by the interesting paper by Mr. J. W. Swan, of Newcastle-on-Tyne, explaining his system of subdividing the electric light, read before the Society of Telegraph Engineers on Wednesday evening. The light produced by Mr. Swan's system is of the incandescence class, and the essential feature of novelty appears to be in the excessively small carbons used and the completeness of the vacuum in which they are burned. He maintained that even where the electric light as produced by the arc was of greatest advantage, the mechanism necessary to counteract its tendency to vary in power, the cost and trouble of replacing the carbons, and other drawbacks, must always greatly diminish and frequently entirely neutralise the advantages of its economy and extreme brilliance. The moment the attempt was made to produce a small arc light the chief redeeming quality of that light—its economy—was sacrificed. He admitted that it had been claimed for several systems at work that they solved the difficulty of subdivision without sacrificing economy; but he maintained that their success was doubtful. The only direction in which we could move with any chance of substantial progress towards making electrical illumination generally practicable was in that of abandoning the arc altogether and going to incandescence pure and simple. By means of incandescence a small enough light could be produced for domestic purposes, and it could be divided indefinitely. With a constant current the same amount of light was then obtainable at any part of a wire, whether it was short or long, and the one condition to be observed towards the maintenance of a constant current was the variation of the electro-motor force in proportion as the length of wire varied.

That there were practical difficulties to be overcome in the application of the incandescence principle was fully recognised, but Mr. Swan showed that these were neither numerous nor insurmountable. The three chief sources of failure were—that due to the carbons being so thick as to require a very strong and, therefore, expensive current in them, that due to the non-durability of the carbons employed, and that due to the lamps speedily becoming blackened or obscured. He stated that 20 years ago he tried to overcome these difficulties, and to produce an electric light by the incandescence of carbonised paper in a lamp from which the air was exhausted, but owing to the less perfect appliances of that day the result was not satisfactory. The discovery of the dynamo-electric machine, which has been constantly referred to in the *Mining Journal* in connection with the economic production of electric currents since the machine of this class, exhibited by Mr. Wm. Ladd at the Paris Exposition in 1867, attracted so much attention; the invention of the Sprengel pump and the experiments of Mr. Crookes in the production of a good vacuum led to fresh investigations, and enabled Mr. Swan to employ successfully the thin filaments of carbon, which he now uses. He explained that the filaments with which his lamps were fitted were extremely thin—only about a hundredth of an inch in diameter; they were 3 in. long. One inch of the carbon filament weighed only one-fiftieth of a grain. The material was both hard and elastic, so as to be more like a steel wire than a carbon. The economy of the light to be obtained by the incandescence of this conductor was limited by its capacity to endure an enormously high temperature corresponding to an extreme degree of incandescence. The carbons were more durable when heated to a moderate degree than when the temperature was pushed to a high point. It was still an open question what was the most light to be obtained by such lamps, but he knew that a well-made lamp with a carbon of one-tenth of an inch total superficial area would endure for several months, if not pressed to give more light than 30 standard candles. As evidence of the character of his light, Mr. Swan showed 12 globes, each containing three of his tiny lamps, and he stated that each of the enclosed lamps was of the power of from 30 to 50 candles, explaining that his object had been to imitate gaslight, but to give as much light as possible.

As to the commercial value of the invention, no definite opinion can be formed until details can be obtained with regard to the composition, cost, and durability of the carbon; but when such men as Professor Ayrton, Mr. Varley, and Professor Tyndall express their satisfaction with the experiments, there need be no doubt that something is to be expected from the invention. Professor Tyndall said the question that remained to be decided was the durability of those extraordinary filaments of carbon, regarding which their curiosity was aroused. Small lamps of this kind might possibly be made of considerable use in coal mines. It was very easy to inclose small

lamps of the kind in water so that they should be protected from the explosive gases of the mine. When the question of the durability of the carbon was settled Mr. Swan's success would be complete. Mr. Swan showed by actual trial at the meeting that an inexperienced person could fit a new lamp much more easily than an ordinary gas globe is fixed in its place. As to the durability test, he had been burning the same lamps since Aug. 8, with one interval of three weeks only. From these data it may safely be assumed that Mr. Swan has come nearer to the production of an electric lamp applicable in collieries than any of his predecessors, and if it be demonstrated by actual trial that 36 lights, each of 30 candle power, can be produced with 4-horse power indicated, there can be no question that Professor Tyndall's suggestion will be adopted, and that collieries will be economically and brilliantly illuminated by a method which will render the ignition of fire-damp, and consequent disastrous explosions, practically impossible.

## ENGINEERING EXHIBITION—AGRICULTURAL HALL.

The improved safety footboard for railway carriages, exhibited by Messrs. Joseph Taylor and Co., of London Wall, and Hodson's economic rotary engine were noticed in last week's Journal, but there are a few other exhibits which demand notice, although anything connected with engineering, in the ordinary acceptation of the term, was extremely difficult to find. There are, however, many articles the value of which will be appreciated by engineers, and of these the RELIANCE LUBRICATING OILS are the most prominent. They are claimed not only to possess excellent body, but absolute freedom from any approach to heating or gumming tendencies. They are a beautiful colour, free from smell; in the most severe weather they never set—a most valuable feature in favour of their use over olive and lard, as the last-named oils in cold weather set fast on the bearings, and in every case the bearings get hot before the oil can be moved. Again, in casks the last-mentioned oils become one solid mass. The Reliance Oils will be found to go as far and do all that oil is called upon to do, as the most expensive oils. The same firm—Messss. A. Lusty and Co., of London—also exhibit cotton belting, glutinous belting syrup, and the climax non-conducting composition for covering steam-boilers.

The PATENT NOISELESS STEAM PUMP, manufactured by Messrs. Hulme and Lund, of Salford, are already so well known as scarcely to need description. Their great recommendation is that they are of simple and strong construction, and require no skilled labour to keep them in working order. They are made with a patent air chamber above the suction pipe, on the base plate, by which arrangement all agitation in the suction pipe is avoided. The air-chamber also greatly reduces the wear and tear of the water valves, and choking up by collection of sediment is impossible, the passages being cleaned out with every stroke of the pump. The adaptability of these pumps makes them a favourite for a great variety of purposes. They will work at either high or low pressure, and by the simple addition of a pulley on the crank shaft they efficiently provide the motive-power for self-stoking apparatus or any small machines. Some of these pumps are already at work in coal mines, forcing water to over 1000 ft. vertically. All the working parts and packings are easy of access and readily adjusted. The columns support the steam cylinder, and are air vessels for the pumps; the cylinders are fitted with metallic pistons; the piston and valve rods are steel, working through brass glands and bushes; the stroke is limited by a crank; the connecting-rods have cottars and brass steps; the pump-valves lift vertically, and are made of brass. Every pump appears to be admirably made, and reflects great credit on the firm.

The PROTECTOR FLUID, although primarily intended for coating ship's bottoms, could probably be advantageously used for the protection of exposed metal work about mines; it is exhibited by the Protector Fluid Company, of Leadenhall-street. It is claimed that until the application of the physical principles embodied in the Protector Fluid no preparation has been discovered which will stand good under the varying conditions of temperature, resist the corroding action of sea water, and keep off living organisms. The extraordinary superiority of the Protector Fluid is due to three pre-eminent qualities. First: In having for its base an intensely bitter juice or gum, that paralyses the efforts of marine animals to attach themselves to a surface coated with it. Second: That it possesses a high insulating power for galvanic action; and, third, that it forms a smooth hard polish, upon which earthy matters and vegetation cannot adhere. The fluid appears to have given entire satisfaction wherever tested.

SPENCE'S METAL, which is, in fact, a metallic cement, and not a metal at all, has already been described in the *Mining Journal*, and is of great interest to miners, since it is obtained by the combination of ground mundic with sulphur. The facility with which mundic can be reduced to an impalpable powder is well known to miners, and this is the most costly part of the process, so that the value of the mundic at the mines ought to increase largely. The inventor, Mr. J. B. Spence, of Lombard-street, states that he prefers to use the natural metallic sulphides, either singly or mixed, but preferably those of iron and copper. These natural ores he grinds to an impalpable powder, and combines them by any suitable mechanical means with the sulphur, while the sulphur is at a melting point. On cooling, the compound will possess great hardness and tenacity, and will have a metallic lustre. The proportion of the sulphur combined with the metallic sulphide or sulphides may vary from 10 to 40 per cent., according to the quality of metal it is desired to produce; but he has found that for general use the addition of about 30 per cent. of sulphur will give good and useful results, a less proportion of sulphur producing a harder metal and a greater proportion a softer metal. The metal thus obtained may be used for a great variety of purposes, but useful and ornamental. Thus, for example, when in a molten state it may cast into various forms, such as statuary, vases, and medallions; for filling in the joints between the tiles and between the lengths of gutter instead of mortar, cement, or solder, or instead of lead for stopping the joints of pipes. The material may also be employed for obtaining reproductions from complicated works of art by casting in elastic moulds. It will also serve for taking impressions from engraved copper or steel plates, or making stereotype plates. It may also be used in the place of cement for plastering purposes generally. For this purpose Mr. J. B. Spence adds only a small percentage of sulphur, which will give, when in a heated state, a plastic material capable of being readily worked with a trowel. Mr. Spence adds that for separating the sulphides of the metals (when combined) from each other and from extraneous substances he allows the compound when in a molten state to cool gradually, and he thus obtains a deposit of the extraneous matters, the sulphides remaining on the top. When reheated the sulphides may be taken off and treated in any convenient manner to separate the sulphides from each other.

As compared with lead, the price is somewhat high, Spence's metal costing 15*l.* to 21*l.* per ton, according to quantity taken, whilst lead is quoted 15*l.* to 16*l.*; but against this it is stated that 1 ton of the former will go as far as 3 tons of the latter, and that it will make joint in 1-10th the time usually spent with lead, whilst for fastening all kinds of iron work in stone or wood, Spence's metal is much cheaper, and retains a better hold on the iron and stone than any other material, and its application is easy and effective. The Spence's metal is specially worthy of the attention of architects and builders; moulds made of the metal produce concrete castings with the finest arrises; they show the true and accurate form of all members of mouldings, and give a fine smooth surface to all ornamental work. Another important feature in the moulds made of Spence's metal is that cement, plaster, clay or water, do not injure the arrises, and that any number of perfect castings may be produced with the same mould, and the metal can be used over and over again. It can also be used for covering and repairing roofs, or making inaccessible corners water-tight. To ironfounders and engineers it will be found most useful for bearings, for filling up defective castings, for all descriptions of rollers, for packing purposes, for fitting pulleys to shafts. Ings without keying, and for engineering work in general. It will supersede the use of block tin for patterns to be kept in stock. The metal resists most of the acids and alkalies, distilled water or atmospheric action, and it is almost a complete non-conductor of heat and cold. The very finest castings, such as reproductions of works of art, are made from this metal, which take the finest polish, and are absolutely insensible to the action of the air, or other climatic influences. Many beautiful reproductions of antique bronzes have been made by Spence's metal, and have been highly approved of by some of the most eminent sculptors. The exhibits at the Agricultural Hall included a number of exquisitely finished medallions, which could leave no doubt as to the applicability of the metal for producing sharp and delicate work.

## ILLUMINATION OF MINES.

Although in England, Belgium, and Germany the illumination of mines has received so much attention both from practical mining engineers and from inventive theorists that but little remains to be learned with reference to the subject, the case is different in Spain, where the prejudice against change is so great that whilst formerly the Spaniards were foremost as miners they have permitted those of other countries to come up and pass them, until at present they are far in the rear. An effort has, however, been made within the past few years to regain their lost prestige, and there are certainly some indications that the efforts will succeed. Several excellent little treatises in Spanish have from time to time been noticed, and now a large and beautifully printed volume (Madrid: Aribau y Ca, Duque de Osuna) on the lighting of underground workings—Historia Descripcion, y Critica de los Sistemas empleados en el Alumbrado de las Excavaciones Subterráneas—has been added to the number of technical works for Spanish mines by Messrs. A. Gil y Maestre and D. De Cortázar, both chief engineers of the Spanish Board of Mines. The volume consists of the Memoria Premiada or Memoir, to which the Special School of Mining Engineers at Madrid awarded the prize offered at the annual prize competition of 1879, and provided for by the munificent donation of Gomez Pardo. The subject given, or tema, was the illumination of mines in general, with special reference to coal mines, particularly Spanish, exposed to the danger of fire-damp explosions—Juicio crítico de los sistemas que actualmente se emplean para el alumbrado de las excavaciones subterráneas, en general, y en particular en las minas de hulla, expuestas á emanaciones de gas inflamable; medio ó medios de sustituirlos con ventaja en las minas de España—and the authors have treated it exhaustively by giving an historical and descriptive outline of all that is known in England, France, and America in connection with the period extending from the time when the steel mill was the only available source of illumination in colliery workings charged with fire-damp to the introduction of the electric light.

Throughout the volume the authors display a laudable desire to make the readers of their memoir as well acquainted with the subject as they are themselves, and, therefore, have introduced in some cases much elementary information with a view to furnish the student with the necessary amount of knowledge to render his subsequent reading profitable. The necessity for this will be readily understood when it is considered that coal mining is a comparatively young industry in Spain, and that even the word for fire-damp—mofeta—had to be adopted from the Italian, and that so little was known of its nature that the Spaniards have taken, as Messrs. Gil y Maestre and De Cortázar point out, the word which in Italy is applied to the emanations of carbonic acid met with in the volcanic districts instead of *fuochi*, which is applied to carburetted hydrogen met with in the mines. The arrangement of the volume is systematic and judicious; it is divided into three parts, each containing several chapters. First there is a series of general considerations by way of introduction, in which such subjects are treated of as the division of the mineral rock formations, the atmosphere of underground workings, the causes of the contamination of air in mines, the nature of the gases met with, and an account of the general conditions of mine illumination, and then the historical and technical parts of the question are carefully discussed. The first part embraces a chapter on ordinary illumination, in which reference is made to the earliest portable lights and the various kinds of lamps—Roman, Italian, German, Spanish, French, and English, petroleum lamps, and so on; and a chapter on the economical conditions which deals with illumination in special cases, the lamps of Rouquayrol and Higgs, the combustibles chiefly used for mine lights, and the like, and gives the price of the various lamps, &c.

Matters more immediately connected with the illumination of collieries are dealt with in the second part, which is divided into five chapters. The source and presence of inflammable gases within mines, explosions, analyses, indicating apparatus, and remarkable accidents, are treated of in the first chapter, and they then refer to the suggestions for the destruction of fire-damp, the lighting of mines to prevent explosions, the experiments of Stephenson and Davy, Tyndall's experiments on the action of wire gauze, and the mathematical theory of Mallard. Safety-lamps form the subject of the third chapter, the Davy lamp, the experiments of Bischoff, and the like being prominently referred to. In the next chapter many improved safety-lamps are described. The inconveniences of the Davy lamp are first pointed out; descriptions are given of the lamps of Dubrulle, Roberts, E. du Mesnil and Mueseler, comparative experiments with various lamps are recorded, Combe's apuratos described, and reference made to the lamps of Stephenson, Clanny, Tappan, Simons, Hislaire, and Souheur, and to the protector apparatus, a modified Clanny which attracted some attention at Manchester some five years since. With reference to the economical conditions mention is made to the cleaning of the meshes, to the illuminating power of safety-lamps, the price of the lamps, the combustibles used, and to the value and consumption thereof, so that the reader can scarcely require more complete details.

The third part is rather a treatise on electric lighting generally than upon underground illumination, the authors probably regarding it as essential that their readers should be well informed upon the whole subject, so that they might be competent to pronounce an opinion as to the applicability of electric illumination to mining purposes. The introductory chapter therefore treats of the nature, properties, and advantages of the electric light, and this is followed by chapters on magnets, electric piles, and machines, and on arc lamps, after which the cost of illumination with the voltaic arc is discussed, the comparative cost of the different lamps being given, as well as the comparison of electric with gas illumination; but considering what has been published in England, and the fact that the memoir was written in 1879, the information given is too stale to be now available. Referring to electric lamps upon the incandescent principle, they commence with a description of Geissler's tubes and of the electric miners' lamps long since introduced by Messrs. Dumas and Benoit for lighting mines, and subsequently notice the lamps of King, Lodiguine, and their successors. In the chapter on the division of the electric light the authors give full prominence to the claims of the several inventors mentioned, but they do not state that these claims were not substantiated without so large a loss of light as to render the subdivision commercially impracticable. The volume closes with a resume of the whole subject, which shows that the authors are well acquainted with what has been written in other countries, and would, therefore, be well able to control collieries in Spain. The work will doubtless be highly appreciated wherever the Spanish language is spoken.

MINING EXPLOSIVES.—In "London Opinion," a new monthly critical and literary journal for the expression of independent thought upon current topics and existing abuses, there is an article upon "Explosives used in Mining Operations," by Major E. J. Williams. The author enumerates the different kinds of explosives now in use for mining work; he shows the difference between an explosive "compound" and a "mixture," and gives the explosive volume as compared with the original bulk of the two now most preferred—namely, gunpowder and dynamite. He gives a description of the chemical method by which nitro-glycerine products are prepared, and then proceeds to show how the Government Inspectors have by their vigilance greatly reduced the area of accidents through carelessness in manufacture, use, or storage, and urges upon all supervisors of mining operations and manufacturers of explosives the absolute necessity of constantly warning their workmen of the dangerous nature of their duties, and of the character of the compounds or mixtures they are handling. Major Williams points out that owing to the constant familiarity with such explosives as have been invented or discovered for blasting purposes having engendered a contempt for or a callousness to danger on the part of those using them, it becomes imperatively necessary that if they will not take the necessary care to preserve themselves from the risk of a sudden and violent death, the local authorities, in whose hands full power is vested by the Act of Parliament, should use that power to the utmost in the humane endeavour to lessen the liability to catastrophe to miners or workers with explosives, by a constant and watchful supervision in every quarter where such compounds or mixtures are either made, used, or stored.

## ELECTRIC LAMPS.

In electric lamps in which a stick of carbon is made to burn in a closed vessel or globe, the atmosphere contained therein when the light is turned out by the current being cut off consists of carbonic oxide and nitrogen; owing to practical difficulties in the way of making joints it is generally found that the atmospheric air while the lamp cools down slowly enters the globe, and the atmosphere therein then consists of carbonic oxide mixed with oxygen and nitrogen, forming an inflammable mixture, which when the lamp is relit causes an explosion and a destruction of the globe, and sometimes also the interior parts of the lamp. To prevent this evil Mr. G. G. ANDRE, of Dorking, proposes to regulate the consumption of the carbon as desired, and as regards carbon lamps working by incandescence to preserve the point of the carbon. He displaces the contents of the closed vessel or lantern during the cooling of the lamp, and feeds it while in action with atmosheric air at a definite rate. He accomplishes this by providing the globe or lantern or parts connected therewith with two small apertures suitably placed and proportioned, the atmosphere within the lamp or lantern escapes by one, and atmospheric air from without enters by the other, the former aperture is by preference made larger than the latter. When the lamp is alight he feeds the incandescent carbon point slowly with air by the aperture aforesaid, and thus causes it to retain its pointed form by the definite or regulated air feed, so that the loss of light which now takes place in closed lamps is prevented to a certain extent, the carbon dust thrown off by the current being also burnt, and thus forming little or no deposit. He thus saves current force, while gaining the advantages pertaining to the burning in the open. One of the apertures may be closed during the action of the lamp in order to lessen the consumption of carbon. He prefers to do this automatically; for this purpose a closing valve may be connected to a solenoid or electro-magnet, which is put into action when the current is turned on for lighting, or it might be done to lessen the consumption of carbon. He prefers to do this automatically; for this purpose a closing valve may be connected to a solenoid or electro-magnet, which is put into action when the current is turned on for lighting, or it may be done by the expansion of a body by heat. Or both apertures may be so closed, in which case the aforesaid feed during the action of the lamp does not take place.

Another arrangement of electric lamp or burner which it is claimed is distinguished from all others now in use by its simplicity, its great lighting capacity in proportion to the expenditure of power, by the electrodes being automatically maintained at an invariable distance apart, whereby absolute fixity of the light is ensured, and also by the length of time during which it will burn without attention, has been invented by Mr. GERARD-LESCUYER, of Paris. The chief improvement consists in the arrangement of the electrodes, which are each formed of two carbons inclined towards one another in the form of the letter V, and so shaped at their points as to meet and touch one another in a vertical plane passing through the axis of the apparatus. The two double electrodes are automatically maintained at a suitable distance apart by mechanism hereafter described, while the fixity of the arc is ensured by an electro-magnet arrangement. The burner is composed of two pairs of tubular carbon holders or guides arranged in the form of an inverted pyramid, through which freely slide the two electrodes, each formed of two carbons, bevelled off to an acute angle at their lower ends so as to meet in a vertical plane, whereby they mutually sustain each other, and are also free to descend as fast as they are consumed. The whole of the burner mechanism is mounted on the upper and under sides of a plate, to one end of which the pair of tubular holders are permanently attached, being insulated therefrom by a plate of vulcanite. The other pair of holders are hinged to the opposite end of the plate. A set screw regulates the interval between the points of the electrodes according to the tension of the current. A spring is provided to maintain this interval between the electrodes, the tension of the spring being regulated by a screw. An electro magnet is placed in a derivation of the current through conducting wires; its armature being attached to the second pan carbon holders. There is a binding stud to which one of the wires from the dynamo-electric machine is attached, the other wire being connected to a second stud behind the first, rollers serving both to guide the carbons and to establish electric contact between them and their holders in order that only a short length of the carbon shall be included in the circuit; an electro-magnet through which the current passes before entering the carbons prevents the formation of the voltaic arc at any other point between the electrodes; the burner is suspended by a hook. The distance between the electrodes is first regulated by a screw, and they are then connected with the two poles of the machine. As communication is not yet established between the points of the carbons the current passes through the electro-magnet, which by attracting its armature brings the electrodes in contact with one another. The current then passes to the points of the carbons and ceases to flow through the electro-magnet which being demagnetised releases the armature, and the spring separates the electrodes to the extent previously regulated by screw, whereupon the voltaic arc is established. Thus the electro-magnet merely serves to establish the arc. The carbons descend by their own gravity as fast as they are consumed in a perfectly uniform manner, and the points maintain an invariable position.

THE ELECTRIC LIGHT.—A new system of electric lighting by the incandescence of filaments of carbon was shown and explained at the Society of Telegraph Engineers, on Wednesday, by the inventor, Mr. J. W. Swan, of Newcastle-on-Tyne. Mr. Swan claims to have solved the problem of subdividing the electric light so as to render it available, when certain minor difficulties are overcome, for domestic purposes. Prof. Tyndall, who was present, said that if the durability of the carbons could be proved by experience, Mr. Swan's success was complete.

SELF-LOCKING SAFETY-LAMP.—In applying his invention to the Davy-lamp, Mr. JOHN TAYLOR, of Tyldesley, fits the lamp with a screw cap round the burner, the centre part of the cap being provided with a short tube, which fits round the outside of the wick-holder. The lamp is thus adapted to burn petroleum, kerosene, crystal oil, or other similar oil, but it may also be used with sperm or other fatty oils if preferred. The lower part of the cap is made with a flange, on which are formed inclined teeth like a ratchet wheel, and the inner part of the body of the lamp is provided with one or more springs, which as the lamp is screwed on engage or lock with these teeth, and the consequence is that the lamp cannot be unscrewed without unscrewing the cap also, and the short tube in the centre being thus caused to rise above the wick puts out the lamp, so that it is impossible to unscrew the lamp without putting out the light. This screwed cap also prevents the oil from being splashed on to the gauze, which is a frequent cause of firing or explosion. Resting on the top of the screwed cap and just fitting inside the bottom gauze (in the Davy-lamp) he has a short glass chimney, and there are no openings below this, so that no air is admitted at or near the bottom of the lamp. The air entering only through the double gauze just above the top of the glass chimney passes in a downward current just inside the latter to the bottom, where it impinges on the flame and then forms an upward current in the centre, and passes out through the top of the upper gauze. The result of this arrangement is that if there should be a strong current of gas the air current becomes disturbed and finally choked, and the lamp instead of exploding goes out.

## Registration of New Companies.

The following joint stock companies have been duly registered:—

THE SHENANGO RAILWAY AND MERCER COAL COMPANY (Limited).—Capital 850,000*l.*, in shares of 10*l.* The acquire the leased Lines Rental Trust Bonds issued by the Atlantic and Great Western Railroad Company (United States), with attached coupons, and to take all steps necessary for completing, developing, or improving the properties of the company, and to form or assist in the formation of any other undertakings. The subscribers (who take one share each) are—H. W. Tyler, M.P., Edmonton; Sir Charles L. Young, knight, 5, Ashbourne Place; J. Coates, Clapham, esquire; G. Sedgwick, 27, Leadenhall-street; D. H. Sutton, 12, Chester-street, esquire; A. A. Barnes, Plaistow, esquire; W. G. Durrant, Woodford, esquire.

F. SOPWITH AND COMPANY (Limited).—Capital 120,000*l.*, in shares of 10*l.* To acquire mining properties in Spain or elsewhere, or shares in mines, concessions, or pertenencias of mineral ground or mines for the purpose of producing lead and other metals, metallic ores and minerals, and to carry on the various operations connected with a mining company in all branches. The subscribers (who take one share each) are—T. Sopwith, 6, Great George-street, C.E.; Sir W. T. Power, 25, Holland Park, K.C.B.; F. Power, Farningham, esquire; G. Villiers, 24, Cromwell-road, gentleman; H. W. Power, 2, Mandeville-place, esquire; G. Seymour, 6, Great George-street, C.E.; W. Glendinning, 6, Great George-street, clerk. The number of directors must not exceed three. The following gentlemen comprise the first board—Sir W. T. Power, Messrs. Sopwith and Villiers.

SANDERSON AND COMPANY (Limited).—Capital 10,000*l.*, in shares of 5*l.*—To acquire and develope the business carried on by the Faraday Steam Works, at Huddersfield, and at 44, Essex-street, Strand. The subscribers (who take one share each) are—W. D. Berry, Huddersfield; W. F. Gillham, Guildford; H. Hemmings, Leeds; H. Marriott, Huddersfield; W. A. Sanderson, Huddersfield; W. Wilkinson, Huddersfield; J. Berry, Huddersfield.

GERHARDINE COLLIERY COMPANY (Limited).—Capital 2000*l.*, in shares of 1*l.* To acquire the Gerhardine Colliery concessions in the kingdom of Prussia, and other concessions and properties adjacent thereto, and the works of such concessions and properties as are incidental or conducive to the attainment of the above objects. The subscribers (who take one share each) are—W. Hughes, 3, Abchurch-lane, accountant; T. Hollis, Stoke Newington, gent.; F. P. Loch, Ealing, solicitor; E. Thomas, 37, Walbrook, accountant; W. H. Bagstock, 29, Huntington-street, clerk; C. H. Austin, 25, Heygate-street, clerk; J. Butt, 22, Selford-road, accountant. There are no Articles of Association registered except a few clauses.

PATENT AUTOMATIC KNITTING MACHINE COMPANY (Limited).—Capital 100,000*l.*, in shares of 1*l.* The manufacture and sale of knitting machines. The subscribers (who take one share each) are—A. Legrave, 21, Dorset-square; H. A. Morris, Gorlaston; C. J. Henderson, 11, St. Donatt's-road; J. Sutherland, Holloway; R. H. Cathcart, Upper Holloway; D. H. Marrble, 42, Ladbrooke-road; T. Secretan, 70, Claverton-street.

THE BAGDALE BREWERY COMPANY (Limited).—Capital 20,000*l.*, in shares of 5*l.* To purchase a brewery business situate at Whitby, Yorkshire, and to carry on and develope the same. The subscribers (who take one share each) are—J. Andrew, 22, Harley-street; H. Power, 37, Great Cumberland-place; F Cooper, 25, Cumberland-place; E. E. Power, 37, Great Cumberland-place; J. W. Woodthorpe, 26, Eastlake-road; E. Cooper. 33, St. James's-square; D'Arcy Power, 37, Great Cumberland-place.

THE SOUTH WYNAAD GOLD MINING COMPANY (Limited).—Capital 100,000*l.*, in shares of 1*l.* each. To purchase or otherwise acquire mines and mineral properties and lands in India, or elsewhere, and more particularly to carry out an agreement made between R. P. Wingrove and H. H. Suckling for the company, for the purchase of two estates, named the Lackadie and Madutella estates, situate in the Wynaad district, Madras Presidency. To construct, lay down, and use all necessary machinery, plant, tools, utensils, tramways, roads, &c., required for the purposes of the company, and generally to carry on all operations connected with gold mining. The subscribers (who take one share each) are—F. G. Hodgson, Ramsgate, major-general; W. A, Barnard, 14, St. Swithin's-lane, agent; W. C. Palmer, 14, St. Swithin's-lane, captain; J. Andrews, 32, Essex-street, solicitor; C. Wright, 14, Great Winchester-street, mining engineer; C. Pass, 51, New Broad-street, stationer; M. Greaves, 51, New Broad-street, stationer. The first directors are—General Hodgson, and Messrs. Barnard, Palmer, and P. M. Tait, their qualification 100 shares, and future directors will be obliged to qualify in 250 shares. The remuneration is 1500*l.*, to be divided amongst the members of the board.

THE GREAT EASTERN FRESH MEAT COMPANY (Limited).—Capital 300,000*l.*, in shares of 10*l.* and 1*l.* To carry on the business of importers, preservers, and salesmen. The subseribers are—J. S. Campbell, 1, Queen's Gate, 50; S. R. L'Amy, 107, Cromwell-road, 50; M. E. Marsden, 43, Doughty-street, 50; W. Norris, 126, Bishopsgate-street, 50; E. Wray, Shooter's Hill, 50; J. Wright, 38, Poultry, 1; E. Edwards, Mincing-lane, 1.

RAMSGATE WEST CLIFF PIER COMPANY (Limited).—Capital 50,000*l.*, in shares of 10*l.* To construct and maintain a promenade pier at Ramsgate. The subscribers (who take two shares each) are—P. P. Pugin, 111, Victoria-street; F. G. M. Stoney, 4, Westminster Chambers; C. W. Pugin, 111, Victoria-street; W. Harvey, 6, Whitehall; F. Ingle, 5, Whitehall; E. B. Clark, 4, Westminster Chambers; R. Dennett, Nottingham.

EAST LONG RAKE MINING COMPANY (Limited).—Capital 20,000*l.*, in shares of 1*l.* To acquire a parcel of mineral land at Waste of Halkyn Mountain, situate in the parish of Halkyn, Flintshire, North Wales, together with all the shafts, pits, engines, levels, slopes, timber, pitwork, implements, fixtures, &c. To carry on and extend said business and generally to search for, win, raise, and render marketable any ores or mineral substances, and to forge, cast, smelt, or otherwise manufacture the metals or other substances found on the properties of the company for the purpose of sale. The subscribers (who take one share each) are—J. Taylor, Havering, M.P.; P. Kinnear, 19, Camomile-street, merchant; R. Johnson, 1, Grace-church-street, merchant; W. McFarlane, Llanrwst, M.E.; H. B. Vercoe, Holywell, M.E.; W. Eaton, Upper Wandsworth, commission agent; J. W. Taylor, 86, London Wall, clerk. With the exception of the first directors—Messrs. J. Taylor, Kinnear, Johnson, and Eaton, the qualification is fixed at 100 shares.

CONDY'S MANUFACTURING COMPANY (Limited).—Capital 50,000*l.*, in shares of 2*l.* To manufacture, prepare, and sell, and otherwise deal in chemicals and chemical mixtures of all kinds, disinfectants, &c. The subscribers (who take one share each) are—A. B. Andradé, Ilford; E. Bye, Forest Hill; G. Condy, Battersea; C. Davis, Shepherd's Bush; W. Hutton, Richmond; H. Moore, Sydenham; A. C. Moffatt, 26, College-street.

BUXTON HYDROPATHIC COMPANY (Limited).—Capital 20,000*l.*, in shares of 2*l.* To establish and maintain hydropathic establishments. The subscribers are—C. Turton, Liverpool; W. H. Ellis, Bootle; T. M. Stanbury, Liverpool; S. Hyde, Buxton; J. F. Bradley, Liverpool; J. R. Barnes, Manchester; C. Kidd, Buxton.

HODGSON'S MANURE AND OIL CAKE COMPANY (Limited).—Capital 50,000*l.*, in shares of 10*l.* For the manufacture, purchase, and sale of different kinds of artificial manures, oil cake, &c., for the improvement of land and cattle. The subscribers (who take 10 shares each) are—T. Armstrong, Newcastle-on-Tyne; H. B. Grey, Riding Mill; T. Wilson, Riding Mill; T. Sample, Newcastle-on-Tyne; J. Lee, Haydon Bridge; T. Bell, Gateshead; M. Havelock, Newcastle-on-Tyne; O. Wallis, Bayton.

THE MYSORE REEFS GOLD MINING COMPANY (Limited).—Capital 120,000*l.*, in shares of 1*l.* To search for gold in the province of Mysore or elsewhere, and to acquire by purchase from C. Stevens the exclusive mining and other rights in certain lands in the district of Kolar Nundydroog, division of Mysore, for 30 years, and which together with similar mining rights were granted by the Government of Mysore to Lieut.-Col. G. de la Poer Beresford, to use and exercise such mining rights, and to seek, win, open, and work gold and other mines and minerals and precious stones upon these and any other properties that may come into the possession of the company. The subscribers (who take one share each) are—W. Perkins, 1, New Broad-street, M.E.; G. Stuart, 8, Great Winchester-street Buildings, M.E.; H. H. Suckling, Ponder's End, secretary to a public company; J. Andrews, 32, Essex-street, solicitor; G. Booth, 32, Essex-street, solicitor; J. H. Rowden, 18, Austinfriars, accountant; H. J. Nash, 18, Austinfriars, accountant. Qualification of future directors shall be 250 shares, and their number must not be less than four or more than seven.

THE BELAIR COMPANY (Limited).—Capital 100,000*l.*, in shares of 1*l.* To carry on the business of planters, merchants, and commission agents in British Guiana, England, or elsewhere. The subscribers are—A. Hogg, 23, Rood-lane, 90,000; W. M. Campbell, 23, Rood-lane, 100; S. C. Hogg, 68, Warwick-square, 5; G. Campbell, White Lion-court, 5; A. H. Campbell, White Lion-court, 5; A. F. Kinnaird, 1, Pall-Mall East, 5; A. C. Hogg, 68, Warwick-square, 5.

THE GOLD CLIFFE STEAMSHIP COMPANY (Limited).—Capital 22,000*l.*, in shares of 10*l.* To carry on a shipowner's business in all branches. The subscribers are—D. Morgan, Newport, 20; C. W. Slade, Newport, 5; J. E. Lewis Abergavenny, 10; R. Alger, Newport, 10; W. F. Stevens, Newport, 10; H. Frazer, Newport, 20; A. Fillene, Newport, 1.

THE RUGBY BRICK AND TILE MANUFACTURING COMPANY (Limited).—Capital 25,000*l.*, in shares of 2*l.* To acquire a business situated at New Bilton, near Rugby, and to carry on and develope the same. The subscribers are—G. G. Rye, 32, Bedford-row, 50; F. Sudling, South Lambeth, 50; W. Ferriday, 14, Trembet-grove, 50; A. J. Lewis, 3, Tressellian-road, 50; J. Penfold, Rugby, 20; T. W. Tarbet, 33, Warwick-street, 5; H. D. Bluett, Lee, 1.

THE ETNA FIRE LIGHT COMPANY (Limited).—Capital 5000*l.*, in shares of 1*l.* To manufacture and sell fire lighters upon the principles of a new invention. The subscribers (who take one share each) are—L. Ward, Exeter; R. Sully, Exeter; A. E. Ward, Exeter; J. F. Gordon, 34, Clement's-lane; H. Elford, Lee; E. Elford, Exeter; R. A. P. Love, Cornwall.

## FOREIGN MINING AND METALLURGY.

The tone of the French iron trade appears more favourable. The downward tendency in prices has been checked, and merchants' iron has made 7*l.* per ton. The situation generally in the Haute-Marne appears somewhat better than it was a year since. The Northern of France Railway Company, for example, possessed in 1879 a stock of 12,000 tons of old iron, which it could not dispose of at 3*l.* 12s. per ton, while now the little which it has to sell is worth 4*l.* 4s. per ton. Pig is worth about 2*l.* 12s. per ton in the North of France. There is a good current consumptive demand, and it is stimulated by an anticipation of some important private and public works being undertaken next year. MM. Londais, Guttin, and Co. have purchased from M. Denille his forges and other works at Creil, and his warehouse at Paris, and they propose to give an important development to the concern. The situation does not improve in the Austrian iron trade. The forgemasters of Carinthia have held a meeting, and have decided to reduce the price of pig to the extent of 12s. per ton. Iron has maintained itself a little better than pig upon the Austro-Hungarian markets. The exports of rails from Germany increased 55,000 tons in the first three-quarters of this year, as compared with the corresponding period of 1879.

The aspect of the Belgian iron trade remains rather dull and sombre, no large contracts of an advantageous character having been recently concluded. Some good contracts for rails on American account have been secured in Germany, but this is not equivalent from a Belgian point of view to the orders for pig-iron which were received in Belgium in the autumn of 1879 from the United States. Belgian pig is, however, still sustained at something over 2*l.* per ton. It appears that in 1879 14 blast-furnaces were in activity, while 27 furnaces were out of blast in the province of Hainaut. The production effected during the year comprised 31,902 tons of casting pig and 192,930 tons of refining pig, or 224,832 tons in all. There was a falling off of 52,845 tons in the production of refining pig last years; on the other hand, the production of casting pig increased 12,320 tons in 1879. There were 24 ironworks in operation in the province in 1879, and their production was 249,624 tons, or 9029 tons less than in 1878.

There has not been much change in the Belgian coal trade. A large demand has prevailed for coal for domestic purposes, and industrious coal has also been in considerable demand. Everywhere the activity prevailing has been very great, and the demand has been met with some difficulty. In the Liége Basin all the collieries are producing as much as it is possible for them to turn out, and managers are in arrear with their orders in consequence of a comparative scarcity of working miners. Prices have generally remained at their former level. There are increasing complaints of the inadequacy of transport facilities. The coalowners of the Liége group have hitherto not had much to complain of in this regard, but they are now beginning to find themselves in much the same position as their brethren of the Hainaut. The production of coal in the province of Hainaut in 1879 was 11,448,531 tons, of the estimated value of 4,368,324. as compared with 11,003,423 tons, of the estimated value of 4,473,667*l.* in 1878. The profit realised from working coal in the Hainaut in 1879 was 25,743*l.* as compared with 33,800*l.* in 1878. Considering the magnitude of the operations undertaken, these results must be pronounced meagre.

The coal trade has not been very active in Austria. This is said to be due to a preference on the part of many firms for German as compared with Austrian coal. The tone of the German coal trade is favourable; prices have been supported with firmness, while important deliveries have been made. Coke has been in active demand, and and coking coal has also been enquired after. Extraction at Sarrebruck has been active, and the production of October was sensibly in excess of that of October, 1879, having amounted to 49,000 tons, as compared with 452,000 tons. The deliveries from the Ruhr basin have been considerable, having amounted in October to 2,197,000 tons, as compared with 2,087,000 tons in October, 1879.

## FOREIGN MINES.

NEW GOLD RUN.—F. M. Chadbourn, Nov. 1: I cleaned up on Oct. 30, and took out with what I had previously cleaned up $1900; this is only doing fairly. I had hoped to do better. We had put through 1900 tons, consequently averaging $1 per ton. The cost of run is about the same as clean-up. I have written you regularly of progress, and you will note that I have spoken of a large amount of gravel necessarily put through that I considered poor, but that it was mixed with bottom, and could not be separated, and all the bottom had been cleaned partially, and I found pretty thoroughly, so all things considered perhaps we have done as well as could be expected. I am pushing ahead the drift as fast as possible, but we are not through the broken bank, and cannot open out a breast until we are, when I am hoping we shall strike some richer bottom. I have cabled you to-day "Remit me by telegraph $2000*l.*" If I was milling richer ground or could commence hydraulicising at once I would not ask you for this amount. I have no doubt but that in a few months I shall be ahead, but at the present I must have help. My pay-roll for October is about $1700, and sundry bills outstanding, together with the water bill in the last hydraulic run, amounts to about $3500. I have on hand about $1200 and must ask you for $2000. I trust you can forward me this amount, for I must pay as I go. I think we shall have an early water season with present indications, which is desirable that we may commence hydraulicing. The expense of mill erection after all completed has far exceeded my calculations, and is what puts me behind.

RUBY AND DUNDERBERG CONSOLIDATED.—Oct. 31: The sinking of the main shaft below the 600 ft. has just been commenced. The 600 ft. level has advanced 15 ft., total 115 ft., ground rock very hard. Drift from north winze 35 ft. below the 500 ft.; has advanced 13 ft.; the ore body at this point is very nearly horizontal, pitching the north slightly. The winze in the south stopes has progressed 15 ft.; the ore is about 2 ft. wide, of good quality; have commenced drifting north from the bottom of this winze for the purpose of prospecting the ore. At the 500 south a rise has been made 28 ft. up in the ore reported in my last; the ore continues about 8 ft. wide, and of good quality. The 500 south drift has advanced 22 ft., the last 15 of which has been in limestone, but is in good ore again the full size of the drift. There is quite an improvement in this part of the mine. The rise above the 400 ft. has advanced 8 ft., the ore is very irregular, varying in size from 2 ft. to almost nothing, but at present is about 2 ft. wide. The 300 west cross-cut has advanced 10 ft., total 296 ft. from the north drift from the old incline. Have shipped 91 tons ore this week; have 42 men at work, besides 4 tribute workers.

Telegram, Nov. 23: The quantity of ore extracted during the week was 134 tons.

ISABELLE GOLD AND SILVER.—Extract of letter from Mr. Lewis Chalmers, dated Nov. 1: "I wrote you last Oct. 26, and now send you foreman's report and progress return for the week ended Oct. 30. Rock still very untractable. The diamond drill will be here to-day and will be put to work without delay."—Foreman's report for week ended Oct. 30: Advanne made 54 ft.; total distance from mouth, 4125 ft.; from monument, 4197 ft. The formation continues the same as last reported, being very hard drilling and blasting; everything in good order and running smoothly.

RINGOLD.—T. Price, Nov. 2: Since writing you last, under date of 18th ult., your favour of the 12th idem has reached me, and contents duly noted. I have in the meantime spent several days at Placerville, and beg to give the exact condition of the property: 1st, the 220 ft. level in shaft No. 1 has been extended since the survey for the distance of 120 ft. in a northerly direction. The quartz is broken and not at all regular, but not expensive driving. I intend to continue this drift another 100 ft. south, then cross-cut into both foot and hanging walls. —2nd, some very good quartz is being extracted from the stopes above the 160 ft. level. The vein here also is very much scattered and broken.—3rd, I have commenced to open up new stopes above the 220 ft. level.—4th, shaft No. 2 is down now 100 ft. The size of the excavation here is 14 ft. by 10 ft., and is timbered in a very substantial manner. Size of shaft after timbering is 10 ft. by 6 ft. in the clear. For the last 30. ft. the shaft has been in slate, the vein having gone off into the hanging-wall (this shaft is an incline shaft, the angles is 70° from the horizontal). After the bottom of the shaft has been properly timbered a cross-cut will be driven east or towards the hanging-wall, and when the vein has been encountered level No. 1 will be started on the course of the vein northerly and southerly. The repairs at the Reid or leased mill have been completed. A building is now being erected over the shaft No. 2, so as to enclose the shaft and horse-whim used in hoisting. This work has somewhat delayed the sinking, but it had to be done before the rain set in. I intend to commence crushing about Dec. 1. I could commence earlier, but I want to open up the quartz in the bottom of the shaft No. 2 first, so as to be able to continue to crush continuously after having once commenced. I intend to be up at Placerville again shortly, or as soon as the cross-cut will have encountered the vein. Everything in and around the property is looking most favourable. A few more weeks and I will be able to speak from actual results.

PLACERVILLE.—T. Price, Nov. 2: Since writing you last, the 18th ult., your favour of the 12th idem has reached me. I have only just returned from the mine, and beg to report as follows:—Sinking for the 600 ft. level is being rapidly pushed along. On Oct. 25 the shaft was done 24 ft., 14 ft. having been sunk in 11 days. With the present rock we can average 10 ft. per week. The cross-cut from the bottom east towards the vein will be about 90 ft. in length; time to drive will depend upon the character of rock, probably not over 60 days will be required for this work. On the 500 ft. level the total distance from the cross-cut to the north end of drift is 150 ft.; the last 26 ft. has not afforded much quartz, the whole vein nearly has been replaced by a horse. I have stopped this work, as it was too expensive with our present low-grade ore; this drift should be extended, as there is every reason to expect good quartz further north. It continued much further in the 400 ft. level, but as we have raised up in the stopes it is evident that the horse of green slate sets in about 30 ft. below the 400 ft. level. This affected the quality of the quartz, as well as along the 500 ft. level; several times while driving this level the prospects were favourable for quartz coming in, and I should have been very glad to have been able to continue it. On the 500 ft. level the length of the pay quartz is only 64 ft. On the 400 ft. level the length of the stope was fully 150 ft. The width will vary from 4 ft. on the north end to 14 ft. on the south end, and on the 500 ft. level the width in one place, about the centre of the pay ore, is fully 20 ft. We must now push the sinking as much as we possibly can. The chances are favourable for good quartz, and lengthening as depth is obtained for following reasons:—1. The vein has not given out or weakened: it is simply occupied with a horse. The quartz is of low grade, because intermixed with green slate, and which we cannot possibly separate. Had it been possible to separate the slate our crushings would yield fully $12 to $14 per ton. As depth is attained the black slate is rapidly approaching the footwall, and may in the 600 ft. level, but will surely in the 700 ft. level be the footwall of the vein. Such a change of ground would be very favourable for a compact vein, increase of yield, and much more cheaply extracted. These statements are not fancies, but are what have happened elsewhere on this belt. I never had more confidence in the existence of a good mine than I have at present in the Placerville. In a few days I will be writing you again, and on the results of the October crushings, which I am afraid will be the poorest we have ever had.

KAPANGA.—James Thomas, Oct. 9: I beg to inform you during the past four week ending the 16th inst., the engine-shaft, size 11 by 8 ft., has been sunk and squared down 2 fms.; depth sunk under tho 50 fm. level 3 fms. 2 ft. The ground unfortunately became much harder than usual during the whole of the month, causing a great difficulty to the men for boring holes in such a hard cross-grained country. The formation of stone is a hard dark crystallised basaltic porphyry or elvan of this country lying in layers or bars dipping westerly about 40°, of a very disjointed or angular character, that makes the sinking progress very slow in boring and blasting. I am hoping this basaltic dyke or bar will soon be sunk through, when an immediate change of better country is almost sure to be met with, to double the progress in sinking. I have been fortunate in obtainiug the best of Cornish shaftmen, with the best of labour to assist them, and must say they are all working well, and nothing more can be done by human hands to make greater speed. As soon as a more favourable change takes place I will set a contract for timbering at once. The pitwork, pumping-engine, and wire-rope winding gear are all in magnificent order. Hope to report a favourable change of ground next mail.

FLAVILLA.—R. Gundry, Nov. 1: I am pleased to inform you that since my last report to you of the mine the drift in Brook's shaft has greatly improved; we have a seam of ore about 6 in. thick, which at least is worth $100 per ton; this is surrounded by ledge matter, interspersed with ore and copper stains. It is really and truly a very fine prospect, and if it continues to improve we shall soon have a mine there. I will get this ore tested in a few days, and will then give you the assay returns. The ore in the branch is about the same as when I last wrote, but the prospect is very favourable. In No. 1 we have sunk about 4 ft., and have the hanging-wall rock of the Flavilla, so that I feel confident we shall find the mine when we get through that layer. The property is improving n value.

PIEREFRITTE.—Nov. 20: The manager reports as follows:—No. 1 stope, over No. 1 level, yields 7 tons of lead ore and blende per fathom; No. 2, below No. 1 level, 9 tons per fathom: No. 4, 14½ tons; No. 5, 10 tons; No. 6, 8 tons; No. 7, 8½ tons; No. 1 stope over No 2 level, 8 tons. The ground in No. 2 end is at present hard for driving. The part of the lode the level is now passing through yields stones of lead ore, but not much to value; it is not the ore-bearing part of it.

PONTGIBAUD.—Roure: The 200 metre level, south of Taylor's shaft, is in a strong lode, composed of quartz spotted with ore. The same level north has entered softer ground; lode unproductive. The 175 south yields a little low-quality saving work. The same level north yields iron pyrites, spotted with lead ore. The 150 metre level south is unproductive. The same level north continues in a regular lode, spotted with lead ore. The 100 metre level, south of Virginie's lode, yields a little low-quality orestuff. The cross-cut east at this level is in hard rock. The 80 metre level north of cross-cut, on the eastern part of the lode, yields a little orestuff. The same level south yields ¼ ton of ore per current metre. The 40 metre level south of cross-cut, on the same part of the lode, opens a little tribute ground. In the same level north we have set to rise to prepare the ground for stoping. The 20 metre level north, on caunter lode, is unproductive. The same level on eastern part of Virginie's lode, yields ¼ ton of ore per current metre. The adit north, on caunter lode, yields ¾ ton of ore per current metre. The winze behind this end yields orestuff of average quality. At Ley the adit level north is being driven on a lode 0·60 centimetres wide, containing a little decomposed quartz and iron pyrites. At Leysoubre an adit level is begun to out the lode lately discovered, and will be pushed on with all possible speed.—La Brousse: The plunger is fixed at the 160 metre level at Alice's shaft, and the sinking of the shaft will be immediately resumed. The 160 metre south is being driven on a lode 1 metre 50 centimetres wide, composed chiefly of quartz spotted with ore. The 140 metre level south opens productive ground, worth ½ ton of ore per current metre. The 120 metre level, north of Basset's shaft, yields a little orestuff. The 100 metre level in the same direction is poor. The same level driven north and south of cross-cut, south of air shaft, on eastern vein, yields a little low-quality orestuff. The 80 metre level south is unproductive.—Pranal: The 110 metre level, south of St. George's shaft, yields ¼ ton of ore per current metre. The 90 metre level north opens productive ground, worth ½ ton of ore per current metre. The 90, south of George's winze, yields ¼ ton of ore per current metre. The 70 metre level north is unproductive. The 50 metre level in the same direction yields a little low-quality orestuff. The 30 metre level south is poor.—Surface: Our dressing operations have gone on regularly, and the samplings have amounted to 203 tons.—Villelonque: The sinking of the trial shaft goes on regularly; the rock is hard and wet.

SENTEIN.—The directors have received advices from their managers of the successful starting of the second section of new dressing machinery at their mines, and it is confidently expected that now the dressing plant and machinery have been completed, at a cost of over 7000*l.*, a very considerable increase in the returns of silver lead ore, carbonate of lead, and blende will shortly be announced.

VIRNEBERG COPPER.—R. K. Roskilley, Nov. 20: Hapley Engine-shafty: Satisfactory progress has been made during the week in the 160 cross-cut, east of shaft, and the lode in the forebreast continues to present that favourable appearance reported on last week; it is yielding beautiful stones of copper ore, and the only noteworthy change here is that the end is letting out a little more water, which is a favourable indication; this evidently shows that the part of the lode which proved so rich in the levels above is still before us in this cross-cut. The stopes in the back of the 140, south of shaft, maintain their yield and value. In the back of the 140, and in the north end of the stope north of cross-cut, the lode shows signs of improvement, and yielding some very fine copper ore. In view of this shoot of ore, improving as the end is being proceeded with, we have put two men to clear the debris in the level below, so as to make the necessary preparations for further developing it in this direction, and in order to lengthen this piece of available ore ground. The stope in the back of the 120, south of shaft, is worth 15*l.* per fathom, and the stope in back of ditto on footwall of the lode is improving and presenting a better appearance. The dressing of ore is being proceeded with as usual, and fair progress made towards another shipment; in view of this, and to endeavour to get cheap freight to Rotherham, I am in communication with agents on the matter.

[For remainder of Foreign Mines se's to-day's Journal.

CHEMICALS, MINERALS, AND METALS.—Messrs. J. Berger Spence and Co. (Nov. 20).—Alum: Loose Lump, 6*l.* 7s. 6d.; lump, 6*l.* 12s 6d.; ground, 7*l.* 5s.—Arsenic: Best white powdered, 11*l.*—Bleaching Powder, 4*l.* 17s. 6d.—Borax: Refined English, 60*l.*—Copperas: Green, 45s.—Copper: Sulphate, 20*l.* 10s. —Nitrate of Lead, 27*l.* 10s.—Nitrate of Soda: 14s.—Potash: 10½d.—Soda: Cream Caustic, 8*l.* 12s. 6d.—Sulphate of Zinc, 11*l.*—Sulphur: Roll, 9*l.*; flour, 12*l.*—Tin crystals, 6¾d. per lb.—White lead, 21*l.* 0s.—Brimstone: Best thirds, 6*l.* 5s.—China-Clay, 39s.—Ochre, 5*l.* 15s.—Oxide of Zinc, 25*l.* 10s.—Talc, 5*l.*—Umber, 45s.—Copper: Best Ingot, 67*l.*; seconds ingot, 66*l.*—Lead: Best soft English, 15*l.*; Pig-Iron, No. 4 Forge, 39s.—Spelter, 17*l.* 0s.—Tin: British common block, 94*l.*; Naphtha Miscible, 5s.

lamps of the kind in water so that they should be protected from the explosive gases of the mine. When the question of the durability of the carbon was settled Mr. Swan's success would be complete. Mr. Swan showed by actual trial at the meeting that an inexperienced person could fit a new lamp much more easily than an ordinary gas globe is fixed in its place. As to the durability test, he had been burning the same lamps since Aug. 8, with one interval of three weeks only. From these data it may safely be assumed that Mr. Swan has come nearer to the production of an electric lamp applicable in collieries than any of his predecessors, and if it be demonstrated by actual trial that 36 lights, each of 30 candle power, can be produced with 4-horse power indicated, there can be no question that Professor Tyndall's suggestion will be adopted, and that collieries will be economically and brilliantly illuminated by a method which will render the ignition of fire-damp, and consequent disastrous explosions, practically impossible.

## ENGINEERING EXHIBITION—AGRICULTURAL HALL.

The improved safety footboard for railway carriages, exhibited by Messrs. Joseph Taylor and Co., of London Wall, and Hodson's economic rotary engine were noticed in last week's Journal, but there are a few other exhibits which demand notice, although anything connected with engineering, in the ordinary acceptation of the term, was extremely difficult to find. There are, however, many articles the value of which will be appreciated by engineers, and of these the RELIANCE LUBRICATING OILS are the most prominent. They are claimed not only to possess excellent body, but absolute freedom from any approach to heating or gumming tendencies. They are a beautiful colour, free from smell; in the most severe weather they never set—a most valuable feature in favour of their use over olive and lard, as the last-named oils in cold weather set fast on the bearings, and in every case the bearings get hot before the oil can be moved. Again, in casks the last-mentioned oils become one solid mass. The Reliance Oils will be found to go as far and do all that oil is called upon to do, as the most expensive oils. The same firm—Messss. A. Lusty and Co., of London—also exhibit cotton belting, glutinous belting syrup, and the climax non-conducting composition for covering steam-boilers.

The PATENT NOISELESS STEAM PUMP, manufactured by Messrs. Hulme and Lund, of Salford, are already so well known as scarcely to need description. Their great recommendation is that they are of simple and strong construction, and require no skilled labour to keep them in working order. They are made with a patent air chamber above the suction pipe, on the base plate, by which arrangement all agitation in the suction pipe is avoided. The air-chamber also greatly reduces the wear and tear of the water valves, and choking up by collection of sediment is impossible, the passages being cleaned out with every stroke of the pump. The adaptability of these pumps makes them a favourite for a great variety of purposes. They will work at either high or low pressure, and by the simple addition of a pulley on the crank shaft they efficiently provide the motive-power for self-stoking apparatus or any small machines. Some of these pumps are already at work in coal mines, forcing water to over 1000 ft. vertically. All the working parts and packings are easy of access and readily adjusted. The columns support the steam cylinder, and are air vessels for the pumps; the cylinders are fitted with metallic pistons; the piston and valve rods are steel, working through brass glands and bushes; the stroke is limited by a crank; the connecting-rods have cottars and brass steps; the pump-valves lift vertically, and are made of brass. Every pump appears to be admirably made, and reflects great credit on the firm.

The PROTECTOR FLUID, although primarily intended for coating ship's bottoms, could probably be advantageously used for the protection of exposed metal work about mines; it is exhibited by the Protector Fluid Company, of Leadenhall-street. It is claimed that until the application of the physical principles embodied in the Protector Fluid no preparation has been discovered which will stand good under the varying conditions of temperature, resist the corroding action of sea water, and keep off living organisms. The extraordinary superiority of the Protector Fluid is due to three pre-eminent qualities. First: In having for its base an intensely bitter juice or gum, that paralyses the efforts of marine animals to attach themselves to a surface coated with it. Second: That it possesses a high insulating power for galvanic action; and, third, that it forms a smooth hard polish, upon which earthy matters and vegetation cannot adhere. The fluid appears to have given entire satisfaction wherever tested.

SPENCE'S METAL, which is, in fact, a metallic cement, and not a metal at all, has already been described in the *Mining Journal*, and is of great interest to miners, since it is obtained by the combination of ground mundic with sulphur. The facility with which mundic can be reduced to an impalpable powder is well known to miners, and this is the most costly part of the process, so that the value of the mundic at the mines ought to increase largely. The inventor, Mr. J. B. Spence, of Lombard-street, states that he prefers to use the natural metallic sulphides, either singly or mixed, but preferably those of iron and copper. These natural ores he grinds to an impalpable powder, and combines them by any suitable mechanical means with the sulphur, while the sulphur is at a melting point. On cooling, the compound will possess great hardness and tenacity, and will have a metallic lustre. The proportion of the sulphur combined with the metallic sulphide or sulphides may vary from 10 to 40 per cent., according to the quality of metal it is desired to produce; but he has found that for general use the addition of about 30 per cent. of sulphur will give good and useful results, a less proportion of sulphur producing a harder metal and a greater proportion a softer metal. The metal thus obtained may be used for a great variety of purposes, but useful and ornamental. Thus, for example, when in a molten state it may cast into various forms, such as statuary, vases, and medallions; for filling in the joints between the tiles and between the lengths of gutter instead of mortar, cement, or solder, or instead of lead for stopping the joints of pipes. The material may also be employed for obtaining reproductions from complicated works of art by casting in elastic moulds. It will also serve for taking impressions from engraved copper or steel plates, or making stereotype plates. It may also be used in the place of cement for plastering purposes generally. For this purpose Mr. J. B. Spence adds only a small percentage of sulphur, which will give, when in a heated state, a plastic material capable of being readily worked with a trowel. Mr. Spence adds that for separating the sulphides of the metals (when combined) from each other and from extraneous substances he allows the compound when in a molten state to cool gradually, and he thus obtains a deposit of the extraneous matters, the sulphides remaining on the top. When reheated the sulphides may be taken off and treated in any convenient manner to separate the sulphides from each other.

As compared with lead, the price is somewhat high, Spence's metal costing 15*l.* to 21*l.* per ton, according to quantity taken, whilst lead is quoted 15*l.* to 16*l.*; but against this it is stated that 1 ton of the former will go as far as 3 tons of the latter, and that it will make joint in 1-10th the time usually spent with lead, whilst for fastening all kinds of iron work in stone or wood, Spence's metal is much cheaper, and retains a better hold on the iron and stone than any other material, and its application is easy and effective. The Spence's metal is specially worthy of the attention of architects and builders; moulds made of the metal produce concrete castings with the finest arrises; they show the true and accurate form of all members of mouldings, and give a fine smooth surface to all ornamental work. Another important feature in the moulds made of Spence's metal is that cement, plaster, clay or water, do not injure the arrises, and that any number of perfect castings may be produced with the same mould, and the metal can be used over and over again. It can also be used for covering and repairing roofs, or making inaccessible corners water-tight. To ironfounders and engineers it will be found most useful for bearings, for filling up defective castings, for all descriptions of rollers, for packing purposes, for fitting pulleys to shafting without keying, and for engineering work in general. It will supersede the use of block tin for patterns to be kept in stock. The metal resists most of the acids and alkalies, distilled water or atmospheric action, and it is almost a complete non-conductor of heat and cold. The very finest castings, such as reproductions of works of art, are made from this metal, which take the finest polish, and are absolutely insensible to the action of the air, or other climatic influences. Many beautiful reproductions of antique bronzes have been made by Spence's metal, and have been highly approved of by some of the most eminent sculptors. The exhibits at the Agricultural Hall included a number of exquisitely finished medallions, which could leave no doubt as to the applicability of the metal for producing sharp and delicate work.

## ILLUMINATION OF MINES.

Although in England, Belgium, and Germany the illumination of mines has received so much attention both from practical mining engineers and from inventive theorists that but little remains to be learned with reference to the subject, the case is different in Spain, where the prejudice against change is so great that whilst formerly the Spaniards were foremost as miners they have permitted those of other countries to come up and pass them, until at present they are far in the rear. An effort has, however, been made within the past few years to regain their lost prestige, and there are certainly some indications that the efforts will succeed. Several excellent little treatises in Spanish have from time to time been noticed, and now a large and beautifully printed volume (Madrid: Aribau y Ca, Duque de Osuna) on the lighting of underground workings—Historia Descripcion, y Critica de los Sistemas empleados en el Alumbrado de las Excavaciones Subterráneas—has been added to the number of technical works for Spanish mines by Messrs. A. Gil y Maestre and D. De Cortázar, both chief engineers of the Spanish Board of Mines. The volume consists of the Memoria Premiada or Memoir, to which the Special School of Mining Engineers at Madrid awarded the prize offered at the annual prize competition of 1879, and provided for by the munificent donation of Gomez Pardo. The subject given, or tema, was the illumination of mines in general, with special reference to coal mines, particularly Spanish, exposed to the danger of fire-damp explosions—Juicio crítico de los sistemas que actualmente se emplean para el alumbrado de las excavaciones subterráneas, en general, y en particular en las minas de hulla, expuestas á emanaciones de gas inflamable; medio ó medios de sustituirlos con ventaja en las minas de España—and the authors have treated it exhaustively by giving an historical and descriptive outline of all that is known in England, France, and America in connection with the period extending from the time when the steel mill was the only available source of illumination in colliery workings charged with fire-damp to the introduction of the electric light.

Throughout the volume the authors display a laudable desire to make the readers of their memoir as well acquainted with the subject as they are themselves, and, therefore, have introduced in some cases much elementary information with a view to furnish the student with the necessary amount of knowledge to render his subsequent reading profitable. The necessity for this will be readily understood when it is considered that coal mining is a comparatively young industry in Spain, and that even the word for fire-damp—mofeta—had to be adopted from the Italian, and that so little was known of its nature that the Spaniards have taken, as Messrs. Gil y Maestre and De Cortázar point out, the word which in Italy is applied to the emanations of carbonic acid met with in the volcanic districts instead of *fuochi*, which is applied to carburetted hydrogen met with in the mines. The arrangement of the volume is systematic and judicious; it is divided into three parts, each containing several chapters. First there is a series of general considerations by way of introduction, in which such subjects are treated of as the division of the mineral rock formations, the atmosphere of underground workings, the causes of the contamination of air in mines, the nature of the gases met with, and an account of the general conditions of mine illumination, and then the historical and technical parts of the question are carefully discussed. The first part embraces a chapter on ordinary illumination, in which reference is made to the earliest portable lights and the various kinds of lamps—Roman, Italian, German, Spanish, French, and English, petroleum lamps, and so on; and a chapter on the economical conditions which deals with illumination in special cases, the lamps of Rouquayrol and Higgs, the combustibles chiefly used for mine lights, and the like, and gives the price of the various lamps, &c.

Matters more immediately connected with the illumination of collieries are dealt with in the second part, which is divided into five chapters. The source and presence of inflammable gases within mines, explosions, analyses, indicating apparatus, and remarkable accidents, are treated of in the first chapter, and they then refer to the suggestions for the destruction of fire-damp, the lighting of mines to prevent explosions, the experiments of Stephenson and Davy, Tyndall's experiments on the action of wire gauze, and the mathematical theory of Mallard. Safety-lamps form the subject of the third chapter, the Davy lamp, the experiments of Bischoff, and the like being prominently referred to. In the next chapter many improved safety-lamps are described. The inconveniences of the Davy lamp are first pointed out; descriptions are given of the lamps of Dubrulle, Roberts, E. du Mesnil and Mueseler, comparative experiments with various lamps are recorded, Combe's apuratos described, and reference made to the lamps of Stephenson, Clanny, Tappan, Simons, Hislaire, and Souheur, and to the protector apparatus, a modified Clanny which attracted some attention at Manchester some five years since. With reference to the economical conditions mention is made to the cleaning of the meshes, to the illuminating power of safety-lamps, the price of the lamps, the combustibles used, and to the value and consumption thereof, so that the reader can scarcely require more complete details.

The third part is rather a treatise on electric lighting generally than upon underground illumination, the authors probably regarding it as essential that their readers should be well informed upon the whole subject, so that they might be competent to pronounce an opinion as to the applicability of electric illumination to mining purposes. The introductory chapter therefore treats of the nature, properties, and advantages of the electric light, and this is followed by chapters on magnets, electric piles, and machines, and on arc lamps, after which the cost of illumination with the voltaic arc is discussed, the comparative cost of the different lamps being given, as well as the comparison of electric with gas illumination; but considering what has been published in England, and the fact that the memoir was written in 1879, the information given is too stale to be now available. Referring to electric lamps upon the incandescent principle, they commence with a description of Geissler's tubes and of the electric miners' lamps long since introduced by Messrs. Dumas and Benoit for lighting mines, and subsequently notice the lamps of King, Lodiguine, and their successors. In the chapter on the division of the electric light the authors give full prominence to the claims of the several inventors mentioned, but they do not state that these claims were not substantiated without so large a loss of light as to render the subdivision commercially impracticable. The volume closes with a resume of the whole subject, which shows that the authors are well acquainted with what has been written in other countries, and would, therefore, be well able to control collieries in Spain. The work will doubtless be highly appreciated wherever the Spanish language is spoken.

MINING EXPLOSIVES.—In "London Opinion," a new monthly critical and literary journal for the expression of independent thought upon current topics and existing abuses, there is an article upon "Explosives used in Mining Operations," by Major E. J. Williams. The author enumerates the different kinds of explosives now in use for mining work; he shows the difference between an explosive "compound" and a "mixture," and gives the explosive volume as compared with the original bulk of the two now most preferred—namely, gunpowder and dynamite. He gives a description of the chemical method by which nitro-glycerine products are prepared, and then proceeds to show how the Government Inspectors have by their vigilance greatly reduced the area of accidents through carelessness in manufacture, use, or storage, and urges upon all supervisors of mining operations and manufacturers of explosives the absolute necessity of constantly warning their workmen of the dangerous nature of their duties, and of the character of the compounds or mixtures they are handling. Major Williams points out that owing to the constant familiarity with such explosives as have been invented or discovered for blasting purposes having engendered a contempt for or a callousness to danger on the part of those using them, it becomes imperatively necessary that if they will not take the necessary care to preserve themselves from the risk of a sudden and violent death, the local authorities, in whose hands full power is vested by the Act of Parliament, should use that power to the utmost in the humane endeavour to lessen the liability to catastrophe to miners or workers with explosives, by a constant and watchful supervision in every quarter where such compounds or mixtures are either made, used, or stored.

## ELECTRIC LAMPS.

In electric lamps in which a stick of carbon is made to burn in a closed vessel or globe, the atmosphere contained therein when the light is turned out by the current being cut off consists of carbonic oxide and nitrogen; owing to practical difficulties in the way of making joints it is generally found that the atmospheric air while the lamp cools down slowly enters the globe, and the atmosphere therein then consists of carbonic oxide mixed with oxygen and nitrogen, forming an inflammable mixture, which when the lamp is relit causes an explosion and a destruction of the globe, and sometimes also the interior parts of the lamp. To prevent this evil Mr. G. G. ANDRE, of Dorking, proposes to regulate the consumption of the carbon as desired, and as regards carbon lamps working by incandescence to preserve the point of the carbon. He displaces the contents of the closed vessel or lantern during the cooling of the lamp, and feeds it while in action with atmosheric air at a definite rate. He accomplishes this by providing the globe or lantern or parts connected therewith with two small apertures suitably placed and proportioned, the atmosphere within the lamp or lantern escapes by one, and atmospheric air from without enters by the other, the former aperture is by preference made larger than the latter. When the lamp is alight he feeds the incandescent carbon point slowly with air by the aperture aforesaid, and thus causes it to retain its pointed form by the definite or regulated air feed, so that the loss of light which now takes place in closed lamps is prevented to a certain extent, the carbon dust thrown off by the current being also burnt, and thus forming little or no deposit. He thus saves current force, while gaining the advantages pertaining to the burning in the open. One of the apertures may be closed during the action of the lamp in order to lessen the consumption of carbon. He prefers to do this automatically; for this purpose a closing valve may be connected to a solenoid or electro-magnet, which is put into action when the current is turned on for lighting, or it might be done to lessen the consumption of carbon. He prefers to do this automatically; for this purpose a closing valve may be connected to a solenoid or electro-magnet, which is put into action when the current is turned on for lighting, or it may be done by the expansion of a body by heat. Or both apertures may be so closed, in which case the aforesaid feed during the action of the lamp does not take place.

Another arrangement of electric lamp or burner which it is claimed is distinguished from all others now in use by its simplicity, its great lighting capacity in proportion to the expenditure of power by the electrodes being automatically maintained at an invariable distance apart, whereby absolute fixity of the light is ensured, and also by the length of time during which it will burn without attention, has been invented by Mr. GERARD-LESCUYER, of Paris. The chief improvement consists in the arrangement of the electrodes, which are each formed of two carbons inclined towards one another in the form of the letter V, and so shaped at their points as to meet and touch one another in a vertical plane passing through the axis of the apparatus. The two double electrodes are automatically maintained at a suitable distance apart by mechanism hereafter described, while the fixity of the arc is ensured by an electro-magnet arrangement. The burner is composed of two pairs of tubular carbon holders or guides arranged in the form of an inverted pyramid, through which freely slide the two electrodes, each formed of two carbons, bevelled off to an acute angle at their lower ends so as to meet in a vertical plane, whereby they mutually sustain each other, and are also free to descend as fast as they are consumed. The whole of the burner mechanism is mounted on the upper and under sides of a plate, to one end of which the pair of tubular holders are permanently attached, being insulated therefrom by a plate of vulcanite. The other pair of holders are hinged to the opposite end of the plate. A set screw regulates the interval between the points of the electrodes according to the tension of the current. A spring is provided to maintain this interval between the electrodes, the tension of the spring being regulated by a screw. An electro magnet is placed in a derivation of the current through conducting wires; its armature being attached to the second pan carbon holders. There is a binding stud to which one of the wires from the dynamo-electric machine is attached, the other wire being connected to a second stud behind the first, rollers serving both to guide the carbons and to establish electric contact between them and their holders in order that only a short length of the carbon shall be included in the circuit; an electro-magnet through which the current passes before entering the carbons prevents the formation of the voltaic arc at any other point between the electrodes; the burner is suspended by a hook. The distance between the electrodes is first regulated by a screw, and they are then connected with the two poles of the machine. As communication is not yet established between the points of the carbons the current passes through the electro-magnet, which by attracting its armature brings the electrodes in contact with one another. The current then passes to the points of the carbons and ceases to flow through the electro-magnet which being demagnetised releases the armature, and the spring separates the electrodes to the extent previously regulated by screw, whereupon the voltaic arc is established. Thus the electro-magnet merely serves to establish the arc. The carbons descend by their own gravity as fast as they are consumed in a perfectly uniform manner, and the points maintain an invariable position.

THE ELECTRIC LIGHT.—A new system of electric lighting by the incandescence of filaments of carbon was shown and explained at the Society of Telegraph Engineers, on Wednesday, by the inventor, Mr. J. W. Swan, of Newcastle-on-Tyne. Mr. Swan claims to have solved the problem of subdividing the electric light so as to render it available, when certain minor difficulties are overcome, for domestic purposes. Prof. Tyndall, who was present, said that if the durabilility of the carbons could be proved by experience, Mr. Swan's success was complete.

SELF-LOCKING SAFETY-LAMP.—In applying his invention to the Davy-lamp, Mr. JOHN TAYLOR, of Tyldesley, fits the lamp with a screw cap round the burner, the centre part of the cap being provided with a short tube, which fits round the outside of the wick-holder. The lamp is thus adapted to burn petroleum, kerosene, crystal oil, or other similar oil, but it may also be used with sperm or other fatty oils if preferred. The lower part of the cap is made with a flange, on which are formed inclined teeth like a ratchet wheel, and the inner part of the body of the lamp is provided with one or more springs, which as the lamp is screwed on engage or lock with these teeth, and the consequence is that the lamp cannot be unscrewed without unscrewing the cap also, and the short tube in the centre being thus caused to rise above the wick puts out the lamp, so that it is impossible to unscrew the lamp without putting out the light. This screwed cap also prevents the oil from being splashed on to the gauze, which is a frequent cause of firing or explosion. Resting on the top of the screwed cap and just fitting inside the bottom gauze (in the Davy-lamp) he has a short glass chimney, and there are no openings below this, so that no air is admitted at or near the bottom of the lamp. The air entering only through the double gauze just above the top of the glass chimney passes in a downward current just inside the latter to the bottom, where it impinges on the flame and then forms an upward current in the centre, and passes out through the top of the upper gauze. The result of this arrangement is that if there should be a strong current of gas the air current becomes disturbed and finally choked, and the lamp instead of exploding goes out.

## Registration of New Companies.

The following joint stock companies have been duly registered:—

THE SHENANGO RAILWAY AND MERCER COAL COMPANY (Limited).—Capital 850,000*l.*, in shares of 10*l.* The acquire the leased Lines Rental Trust Bonds issued by the Atlantic and Great Western Railroad Company (United States), with attached coupons, and to take all steps necessary for completing, developing, or improving the properties of the company, and to form or assist in the formation of any other undertakings. The subscribers (who take one share each) are—H. W. Tyler, M.P., Edmonton; Sir Charles L. Young, knight, 5, Ashbourne Place; J. Coates, Clapham, esquire; G. Sedgwick, 27, Leadenhall-street; D. H. Sutton, 12, Chester-street, esquire; A. A. Barnes, Plaistow, esquire; W. G. Durrant, Woodford, esquire.

T. SOPWITH AND COMPANY (Limited).—Capital 120,000*l.*, in shares of 10*l.* To acquire mining properties in Spain or elsewhere, or shares in mines, concessions, or pertenencias of mineral ground or mines for the purpose of producing lead and other metals, metallic ores and minerals, and to carry on the various operations connected with a mining company in all branches. The subscribers (who take one share each) are—T. Sopwith, 6, Great George-street, C.E.; Sir W. T. Power, 25, Holland Park, K.C.B.; F. Power, Farningham, esquire; G. Villiers, 24, Cromwell-road, gentleman; H. W. Power, 2, Mandeville-place, esquire; G. Seymour, 6, Great George-street, C.E.; W. Glendinning, 6, Great George-street, clerk. The number of directors must not exceed three. The following gentlemen comprise the first board—Sir W. T. Power, Messrs. Sopwith and Villiers.

SANDERSON AND COMPANY (Limited).—Capital 10,000*l.*, in shares of 5*l.*—To acquire and develope the business carried on by the Faraday Steam Works, at Huddersfield, and at 44, Essex-street, Strand. The subscribers (who take one share each) are—W. D. Berry, Huddersfield; W. F. Gillham, Guildford; H. Hemmings, Leeds; H. Marriott, Huddersfield; W. A. Sanderson, Huddersfield; W. Wilkinson, Huddersfield; J. Berry, Huddersfield.

GERHARDINE COLLIERY COMPANY (Limited).—Capital 2000*l.*, in shares of 1*l.* To acquire the Gerhardine Colliery concessions in the kingdom of Prussia, and other concessions and properties adjacent thereto, and the works of such concessions and properties as are incidental or conducive to the attainment of the above objects. The subscribers (who take one share each) are—W. Hughes, 3, Abchurch-lane, accountant; T. Hollis, Stoke Newington, gent.; F. P. Loch, Ealing, solicitor; E. Thomas, 37, Walbrook, accountant; W. H. Bagstock, 29, Huntington-street, clerk; C. H. Austin, 25, Heygate-street, clerk; J. Butt, 22, Selford-road, accountant. There are no Articles of Association registered except a few clauses.

PATENT AUTOMATIC KNITTING MACHINE COMPANY (Limited).—Capital 100,000*l.*, in shares of 1*l.* The manufacture and sale of knitting machines. The subscribers (who take one share each) are—A. Legrave, 21, Dorset-square; H. A. Morris, Gorlaston; C. J. Henderson, 11, St. Donatt's-road; J. Sutherland, Holloway; R. H. Cathcart, Upper Holloway; D. H. Marrble, 42, Ladbrooke-road; T. Secretan, 70, Claverton-street.

THE BAGDALE BREWERY COMPANY (Limited).—Capital 20,000*l.*, in shares of 5*l.* To purchase a brewery business situate at Whitby, Yorkshire, and to carry on and develope the same. The subscribers (who take one share each) are—J. Andrew, 22, Harley-street; H. Power, 37, Great Cumberland-place; F Cooper, 25, Cumberland-place; E. E. Power, 37, Great Cumberland-place; J. W. Woodthorpe, 26, Eastlake-road; E. Cooper. 33, St. James's-square; D'Arcy Power, 37, Great Cumberland-place.

THE SOUTH WYNAAD GOLD MINING COMPANY (Limited).—Capital 100,000*l.*, in shares of 1*l.* each. To purchase or otherwise acquire mines and mineral properties and lands in India, or elsewhere, and more particularly to carry out an agreement made between R. P. Wingrove and H. H. Suckling for the company, for the purchase of two estates, named the Lackadie and Madutella estates, situate in the Wynaad district, Madras Presidency. To construct, lay down, and use all necessary machinery, plant, tools, utensils, tramways, roads, &c., required for the purposes of the company, and generally to carry on all operations connected with gold mining. The subscribers (who take one share each) are—F. G. Hodgson, Ramsgate, major-general; W. A. Barnard, 14, St. Swithin's-lane, agent; W. C. Palmer, 14, St. Swithin's-lane, captain; J. Andrews, 32, Essex-street, solicitor; C. Wright, 14, Great Winchester-street, mining engineer; C. Pass, 51, New Broad-street, stationer; M. Greaves, 51, New Broad-street, stationer. The first directors are—General Hodgson, and Messrs. Barnard, Palmer, and P. M. Tait, their qualification 100 shares, and future directors will be obliged to qualify in 250 shares. The remuneration is 1500*l.*, to be divided amongst the members of the board.

THE GREAT EASTERN FRESH MEAT COMPANY (Limited).—Capital 300,000*l.*, in shares of 10*l.* and 1*l.* To carry on the business of importers, preservers, and salesmen. The subscribers are—J. S. Campbell, 1, Queen's Gate, 50; S. R. L'Amy, 107, Cromwell-road, 50; M. E. Marsden, 43, Doughty-street, 50; W. Norris, 126, Bishopsgate-street, 50; E. Wray, Shooter's Hill, 50; J. Wright, 38, Poultry, 1; E. Edwards, Mincing-lane, 1.

RAMSGATE WEST CLIFF PIER COMPANY (Limited).—Capital 30,000*l.*, in shares of 10*l.* To construct and maintain a promenade pier at Ramsgate. The subscribers (who take two shares each) are—A. P. Pugin, 111, Victoria-street; F. G. M. Stoney, 4, Westminster Chambers; C. W. Pugin, 111, Victoria-street; W. Harvey, 6, Whitehall; F. Ingle, 5, Whitehall; E. B. Clark, 4, Westminster Chambers; R. Dennett, Nottingham.

EAST LONG RAKE MINING COMPANY (Limited).—Capital 20,000*l.*, in shares of 1*l.* To acquire a parcel of mineral land at Waste of Halkyn Mountain, situate in the parish of Halkyn, Flintshire, North Wales, together with all the shafts, pits, engines, levels, stopes, timber, pitwork, implements, fixtures, &c. To carry on and extend said business and generally to search for, win, raise, and render marketable any ores or mineral substances, and to forge, cast, smelt, or otherwise manufacture the metals or other substances found on the properties of the company for the purpose of sale. The subscribers (who take one share each) are—J. Taylor, Havering, M.P.; T. Kinnear, 19, Camomile-street, merchant; R. Johnson, 1, Gracechurch-street, merchant; W. McFarlane, Llanrwst, M.E.; H. B. Vercoe, Holywell, M.E.; W. Eaton, Upper Wandsworth, commission agent; J. W. Taylor, 86, London Wall, clerk. With the exception of the first directors—Messrs. J. Taylor, Kinnear, Johnson, and Eaton, the qualification is fixed at 100 shares.

CONDY'S MANUFACTURING COMPANY (Limited).—Capital 50,000*l.*, in shares of 2*l.* To manufacture, prepare, and sell, and otherwise deal in chemicals and chemical mixtures of all kinds, disinfectants, &c. The subscribers (who take one share each) are—A. B. Andradé, Oxford; E. Bye, Forest Hill; G. Condy, Battersea; C. Davis, Shepherd's Bush; W. Hutton, Richmond; H. Moore, Sydenham; A. C. Moffatt, 26, College-street.

BUXTON HYDROPATHIC COMPANY (Limited).—Capital 20,000*l.*, in shares of 2*l.* To establish and maintain hydropathic establishments. The subscribers are—C. Turton, Liverpool; W. H. Ellis, Bootle; T. H. Stanbury, Liverpool; S. Hyde, Buxton; J. F. Bradley, Liverpool; J. R. Barnes, Manchester; C. Kidd, Buxton.

HODGSON'S MANURE AND OIL CAKE COMPANY (Limited).—Capital 50,000*l.*, in shares of 10*l.* For the manufacture, purchase, and sale of different kinds of artificial manures, oil cake, &c., for the improvement of land and cattle. The subscribers (who take 10 shares each) are—T. Armstrong, Newcastle-on-Tyne; H. B. Grey, Riding Mill; T. Wilson, Riding Mill; T. Sample, Newcastle-on-Tyne; J. Lee, Haydon Bridge; T. Bell, Gateshead; M. Havelock, Newcastle-ou-Tyne; O. Wallis, Bayton.

THE MYSORE REEFS GOLD MINING COMPANY (Limited).—Capital 120,000*l.*, in shares of 1*l.* To search for gold in the province of Mysore or elsewhere, and to acquire by purchase from C. Stevens the exclusive mining and other rights in certain lands in the district of Kolar Nundydroog, division of Mysore, for 30 years, and which together with similar mining rights were granted by the Government of Mysore to Lieut.-Col. G. de la Poer Beresford, to use and exercise such mining rights, and to seek, win, open, and work gold and other mines and minerals and precious stones upon these and any other properties that may come into the possession of the company. The subscribers (who take one share each) are—W. Perkins, 1, New Broad-street, M.E.; G. Stuart, 8, Great Winchester-street Buildings, M.E.; H. H. Suckling, Ponder's End, secretary to a public company; J. Andrews, 32, Essex-street, solicitor; G. Booth, 32, Essex-street, solicitor; J. H. Rowden, 18, Austinfriars, accountant; H. J. Nash, 18, Austinfriars, accountant. Qualification of future directors shall be 250 shares, and their number must not be less than four or more than seven.

THE BELAIR COMPANY (Limited).—Capital 100,000*l.*, in shares of 1*l.* To carry on the business of planters, merchants, and commission agents in British Guiana, England, or elsewhere. The subscribers are—A. Hogg, 23, Rood-lane, 90,000; W. M. Campbell, 23, Rood-lane, 100; S. C. Hogg, 68, Warwick-square, 5; G. Campbell, White Lion-court, 5; A. H. Campbell, White Lion-court, 5; A. F. Kinnaird, 1, Pall-Mall East, 5; A. C. Hogg, 68, Warwick-square, 5.

THE GOLD CLIFFE STEAMSHIP COMPANY (Limited).—Capital 22,000*l.*, in shares of 10*l.* To carry on a shipowner's business in all branches. The subscribers are—D. Morgan, Newport, 20; C. W. Slade, Newport, 5; J. E. Lewis Abergavenny, 10; R. Alger, Newport, 10; W. F. Stevens, Newport, 10; H. Frazer, Newport, 20; A. Fillene, Newport, 1.

THE RUGBY BRICK AND TILE MANUFACTURING COMPANY (Limited).—Capital 25,000*l.*, in shares of 2*l.* To acquire a business situated at New Bilton, near Rugby, and to carry on and develope the same. The subscribers are—G. G. Rye, 32, Bedford-row, 50; F. Sudling, South Lambeth, 50; W. Ferriday, 14, Trembet-grove, 50; A. J. Lewis, 3, Tressellian-road, 50; J. Penfold, Rugby, 20; T. W. Tarbet, 33, Warwick-street, 5; H. D. Bluett, Lee, 1.

THE ETNA FIRE LIGHT COMPANY (Limited).—Capital 5000*l.*, in shares of 1*l.* To manufacture and sell fire lighters upon the principles of a new invention. The subscribers (who take one share each) are—L. Ward, Exeter; R. Sully, Exeter; A. E. Ward, Exeter; J. F. Gordon, 34, Clement's-lane; H. Elford, Lee; E. Elford, Exeter; R. A. P. Love, Cornwall.

## FOREIGN MINING AND METALLURGY.

The tone of the French iron trade appears more favourable. The downward tendency in prices has been checked, and merchants' iron has made 7*l.* per ton. The situation generally in the Haute-Marne appears somewhat better than it was a year since. The Northern of France Railway Company, for example, possessed in 1879 a stock of 12,000 tons of old iron, which it could not dispose of at 3*l.* 12s. per ton, while now the little which it has to sell is worth 4*l.* 4s. per ton. Pig is worth about 2*l.* 12s. per ton in the North of France. There is a good current consumptive demand, and it is stimulated by an anticipation of some important private and public works being undertaken next year. MM. Londais, Guttin, and Co. have purchased from M. Denille his forges and other works at Creil, and his warehouse at Paris, and they propose to give an important development to the concern. The situation does not improve in the Austrian iron trade. The forgemasters of Carinthia have held a meeting, and have decided to reduce the price of pig to the extent of 12s. per ton. Iron has maintained itself a little better than pig upon the Austro-Hungarian markets. The exports of rails from Germany increased 55,000 tons in the first three-quarters of this year, as compared with the corresponding period of 1879.

The aspect of the Belgian iron trade remains rather dull and sombre, no large contracts of an advantageous character having been recently concluded. Some good contracts for rails on American account have been secured in Germany, but this is not equivalent from a Belgian point of view to the orders for pig-iron which were received in Belgium in the autumn of 1879 from the United States. Belgian pig is, however, still sustained at something over 2*l.* per ton. It appears that in 1879 14 blast-furnaces were in activity, while 27 furnaces were out of blast in the province of Hainaut. The production effected during the year comprised 31,902 tons of casting pig and 192,930 tons of refining pig, or 224,832 tons in all. There was a falling off of 52,845 tons in the production of refining pig last years; on the other hand, the production of casting pig increased 12,320 tons in 1879. There were 24 ironworks in operation in the province in 1879, and their production was 249,624 tons, or 9029 tons less than in 1878.

There has not been much change in the Belgian coal trade. A large demand has prevailed for coal for domestic purposes, and industrious coal has also been in considerable demand. Everywhere the activity prevailing has been very great, and the demand has been met with some difficulty. In the Liége Basin all the collieries are producing as much as it is possible for them to turn out, and managers are in arrear with their orders in consequence of a comparative scarcity of working miners. Prices have generally remained at their former level. There are increasing complaints of the inadequacy of transport facilities. The coalowners of the Liége group have hitherto not had much to complain of in this regard, but they are now beginning to find themselves in much the same position as their brethren of the Hainaut. The production of coal in the province of Hainaut in 1879 was 11,448,531 tons, of the estimated value of 4,368,324. as compared with 11,003,423 tons, of the estimated value of 4,473,667*l.* in 1878. The profit realised from working coal in the Hainaut in 1879 was 25,743*l.* as compared with 33,800*l.* in 1878. Considering the magnitude of the operations undertaken, these results must be pronounced meagre.

The coal trade has not been very active in Austria. This is said to be due to a preference on the part of many firms for German as compared with Austrian coal. The tone of the German coal trade is favourable; prices have been supported with firmness, while important deliveries have been made. Coke has been in active demand, and and coking coal has also been enquired after. Extraction at Sarrebruck has been active, and the production of October was sensibly in excess of that of October, 1879, having amounted to 49,000 tons, as compared with 452,000 tons. The deliveries from the Ruhr basin have been considerable, having amounted in October to 2,197,000 tons, as compared with 2,087,000 tons in October, 1879.

## FOREIGN MINES.

NEW GOLD RUN.—F. M. Chadbourn, Nov. 1: I cleaned up on Oct. 30, and took out with what I had previously cleaned up $1900; this is only doing fairly. I had hoped to do better. We had put through 1900 tons, consequently averaging $1 per ton. The cost of run is about the same as clean-up. I have written you regularly of progress, and you will note that I have spoken of a large amount of gravel necessarily put through that I considered poor, but that it was mixed with bottom, and could not be separated, and all the bottom had been cleaned partially, and I found pretty thoroughly, so all things considered perhaps we have done as well as could be expected. I am pushing ahead the drift as fast as possible, but we are not through the broken bank, and cannot open out a breast until we are, when I am hoping we shall strike some richer bottom. I have cabled you to-day "Remit me by telegraph $2000*l.* If I was milling richer ground or could commence hydraulicising at once I would not ask you for this amount. I have no doubt but that in a few months I shall be ahead, but at the present I must have help. My pay-roll for October is about $1700, and sundry bills outstanding, together with the water bill in the last hydraulic run, amounts to about $3500. I have on hand about $1200 and must ask you for $2000. I trust you can forward me this amount, for I must pay as I go. I think we shall have an early water season with present indications, which is desirable that we may commence hydraulicing. The expense of mill erection after all completed has far exceeded my calculations, and is what puts me behind.

RUBY AND DUNDERBERG CONSOLIDATED.—Oct. 31: The sinking of the main shaft below the 600 ft. has just been commenced. The 600 ft. level has advanced 15 ft., total 115 ft., ground rock very hard. Drift from north winze 35 ft. below the 500 ft.; has advanced 13 ft.; the ore body at this point is very nearly horizontal, pitching the north slightly. The winze in the south stopes has progressed 16 ft.; the ore is about 2 ft. wide, of good quality; have commenced drifting north from the bottom of this winze for the purpose of prospecting the ore. At the 500 south a rise has been made 28 ft. up in the ore reported in my last; the ore continues about 8 ft. wide, and of good quality. The 500 south drift has advanced 22 ft., the last 15 of which has been in limestone, but is in good ore again the full size of the drift. There is quite an improvement in this part of the mine. The rise above the 400 ft. has advanced 8 ft., the ore is very irregular, varying in size from 2 ft. to almost nothing, but at present is about 2 ft. wide. The 300 west cross-cut has advanced 10 ft., total 296 ft. from the north drift from the old incline. Have shipped 91 tons ore this week; have 42 men at work, besides 4 tribute workers.

Telegram, Nov. 23: The quantity of ore extracted during the week was 134 tons.

ISABELLE GOLD AND SILVER.—Extract of letter from Mr. Lewis Chalmers, dated Nov. 1: "I wrote you last Oct. 26, and now send you foreman's report and progress return for the week ended Oct. 30. Rock still very untractable. The diamond drill will be here to-day and will be put to work without delay."—Foreman's report for week ended Oct. 30: Advanne made 54 ft.; total distance from mouth, 4125 ft.; from monument, 4197 ft. The formation continues the same as last reported, being very hard drilling and blasting; everything in good order and running smoothly.

RINGOLD.—T. Price, Nov. 2: Since writing you last, under date of 18th ult., your favour of the 12th idem has reached me, and contents duly noted. I have in the meantime spent several days at Placerville, and beg to give the exact condition of the property: 1st, the 220 ft. level in shaft No. 1 has been extended since the survey for the distance of 120 ft. in a northerly direction. The quartz is broken and not at all regular, but not expensive driving. I intend to continue this drift another 100 ft. south, then cross-cut into both foot and hanging walls.—2nd, some very good quartz is being extracted from the stopes above the 160 ft. level. The vein here also is very much scattered and broken.—3rd, I have commenced to open up new stopes above the 220 ft. level.—4th, shaft No. 2 is down now 100 ft. The size of the excavation here is 14 ft. by 10 ft., and is timbered in a very substantial manner. Size of shaft after timbering is 10 ft. by 6 ft. in the clear. For the last 30. ft. the shaft has been in slate, the vein having gone off into the hanging-wall (this shaft is an incline shaft, the angles is 70° from the horizontal). After the bottom of the shaft has been properly timbered a cross-cut will be driven east or towards the hanging-wall, and when the vein has been encountered level No. 1 will be started on the course of the vein northerly and southerly. The repairs at the Reid or leased mill have been completed. A building is now being erected over the shaft No. 2, so as to enclose the shaft and horse-whim used in hoisting. This work has somewhat delayed the sinking, but it had to be done before the rain set in. I intend to commence crushing about Dec. 1. I could commence earlier, but I want to open up the quartz in the bottom of the shaft No. 2 first, so as to be able to continue to crush continuously after having once commenced. I intend to be up at Placerville again shortly, or as soon as the cross-cut will have encountered the vein. Everything in and around the property is looking most favourable. A few more weeks and I will be able to speak from actual results.

PLACERVILLE.—T. Price, Nov. 2: Since writing you last, the 18th ult., your favour of the 12th idem has reached me. I have only just returned from the mine, and beg to report as follows:—Sinking for the 600 ft. level is being rapidly pushed along. On Oct. 25 the shaft was done 24 ft., 14 ft. having been sunk in 11 days. With the present rock we can average 10 ft. per week. The cross-cut from the bottom east towards the vein will be about 90 ft. in length; time to drive will depend upon the character of rock, probably not over 60 days will be required for this work. On the 500 ft. level the total distance from the cross-cut to the north end of drift is 150 ft.; the last 26 ft. has not afforded much quartz, the whole vein nearly has been replaced by a horse. I have stopped this work, as it was too expensive with our present low-grade ore; this drift should be extended, as there is every reason to expect good quartz further north. It continued much further in the 400 ft. level, but as we have raised up in the stopes it is evident that the horse of green slate sets in about 30 ft. below the 400 ft. level. This affected the quality of the quartz, as well as along the 500 ft. level; several times while driving this level the prospects were favourable for quartz coming in, and I should have been very glad to have been able to continue it. On the 500 ft. level the length of the pay quartz is only 64 ft. On the 400 ft. level the length of the stope was fully 150 ft. The width will vary from 4 ft. on the north end to 14 ft. on the south end, and on the 500 ft. level the width in one place, about the centre of the pay ore, is fully 20 ft. We must now push the sinking as much as we possibly can. The chances are favourable for good quartz, and lengthening as depth is obtained for following reasons:—1. The vein has not given out or weakened: it is simply occupied with a horse. The quartz is of low grade, because intermixed with green slate, and which we cannot possibly separate. Had it been possible to separate the slate our crushings would yield fully $12 to $14 per ton. As depth is attained the black slate is rapidly approaching the footwall, and may in the 600 ft. level, but will surely in the 700 ft. level be the footwall of the vein. Such a change of ground would be very favourable for a compact vein, increase of yield, and much more cheaply extracted. These statements are not fancies, but are what have happened elsewhere on this belt. I never had more confidence in the existence of a good mine than I have at present in the Placerville. In a few days I will be writing you again, and on the results of the October crushings, which I am afraid will be the poorest we have ever had.

KAPANGA.—James Thomas, Oct. 9: I beg to inform you during the past four week ending the 16th inst., the engine-shaft, size 11 by 8 ft., has been sunk and squared down 2 fms.; depth sunk under tho 50 fm. level 3 fms. 2 ft. The ground unfortunately became much harder than usual during the whole of the month, causing a great difficulty to the men for boring holes in such a hard cross-grained country. The formation of stone is a hard dark crystallised basaltic porphyry or elvan of this country lying in layers or bars dipping westerly about 40°, of a very disjointed or angular character, that makes the sinking progress very slow in boring and blasting. I am hoping this basaltic dyke or bar will soon be sunk through, when an immediate change of better country is almost sure to be met with, to double the progress in sinking. I have been fortunate in obtaining the best of Cornish shaftmen, with the best of labour to assist them, and must say they are all working well, and nothing more can be done by human hands to make greater speed. As soon as a more favourable change takes place I will set a contract for timbering at once. The pitwork, pumping-engine, and wire-rope winding gear are all in magnificent order. Hope to report a favourable change of ground next mail.

FLAVILLA.—R. Gundry, Nov. 1: I am pleased to inform you that since my last report to you of the mine the drift in Brook's shaft has greatly improved; we have a seam of ore about 6 in. thick, which at least is worth $100 per ton; this is surrounded by ledge matter, interspersed with ore and copper stains. It is really and truly a very fine prospect, and if it continues to improve we shall soon have a mine there. I will get this ore tested in a few days, and will then give you the assay returns. The ore in the branch is about the same as when I last wrote, but the prospect is very favourable. In No. 1 we have sunk about 4 ft., and have the hanging-wall rock of the Flavilla, so that I feel confident we shall find the mine when we get through that layer. The property is improving n value.

PIEREFRITTE.—Nov. 20: The manager reports as follows:—No. 1 stope, over No. 1 level, yields 7 tons of lead ore and blende per fathom; No. 2, below No. 1 level, 9 tons per fathom: No. 4, 14½ tons; No. 5, 10 tons; No. 6, 8 tons; No. 7, 8½ tons; No. 1 stope over No 2 level, 8 tons. The ground in No. 2 end is at present hard for driving. The part of the lode the level is now passing through yields stones of lead ore, bu( not much to value; it is not the ore-bearing part of it.

PONTGIBAUD.—Roure: The 200 metre level, south of Taylor's shaft, is in a strong lode, composed of quartz spotted with ore. The same level north has entered softer ground; lode unproductive. The 175 south yields a little low-quality saving work. The same level north yields iron pyrites, spotted with lead ore. The 150 metre level south is unproductive. The same level north continues in a regular lode, spotted with lead ore. The 100 metre level, south of Virginie's lode, yields a little low-quality orestuff. The cross-cut east at this level is in hard rock. The 80 metre level north of cross-cut, on the eastern part of the lode, yields a little orestuff. The same level south yields ¼ ton of ore per current metre. The 40 metre level south of cross-cut, on the same part of the lode, opens a little tribute ground. In the same level north we have set to rise to prepare the ground for stoping. The 20 metre level north, on caunter lode, is unproductive. The same level on eastern part of Virginie's lode, yields ¾ ton of ore per current metre. The adit north, on caunter lode, yields ¼ ton of ore per current metre. The winze behind this end yields orestuff of average quality. At Ley the adit level north is being driven on a lode 0·60 centimetres wide, containing a little decomposed quartz and iron pyrites. At Leysoubre an adit level is begun to cut the lode lately discovered, and will be pushed on with all possible speed.—La Brousse: The plunger is fixed at the 160 metre level at Alice's shaft, and the sinking of the shaft will be immediately resumed. The 160 metre south is being driven on a lode 1 metre 50 centimetres wide, composed chiefly of quartz spotted with ore. The 140 metre level south opens productive ground, worth ½ ton of ore per current metre. The 120 metre level, north of Basset's shaft, yields a little orestuff. The 100 metre level in the same direction is poor. The same level driven north and south of cross-cut, south of air shaft, on eastern vein, yields a little low-quality orestuff. The 80 metre level south is unproductive.—Pranal: The 110 metre level, south of St. George's shaft, yields ¼ ton of ore per current metre. The 90 metre level north opens productive ground, worth ½ ton of ore per current metre. The 90, south of George's winze, yields ¼ ton of ore per current metre. The 70 metre level north is unproductive. The 50 metre level in the same direction yields a little low-quality orestuff. The 30 metre level south is poor.—Surface: Our dressing operations have gone on regularly, and the samplings have amounted to 203 tons.—Villelonque: The sinking of the trial shaft goes on regularly; the rock is hard and wet.

SENTEIN.—The directors have received advices from their managers of the successful starting of the second section of new dressing machinery at their mines, and it is confidently expected that now the dressing plant and machinery have been completed, at a cost of over 7000*l.*, a very considerable increase in the returns of silver lead ore, carbonate of lead, and blende will shortly be announced.

VIRNEBERG COPPER.—R. K. Roskilley, Nov. 20: Hapley Engine-shafty: Satisfactory progress has been made during the week in the 160 cross-cut, east of shaft, and the lode in the forebreast continues to present that favourable appearance reported on last week; it is yielding beautiful stones of copper ore, and the only noteworthy change here is that the end is letting out a little more water, which is a favourable indication; this evidently shows that the part of the lode which proved so rich in the levels above is still before us in this cross-cut. The stopes in the back of the 140, south of shaft, maintain their yield and value. In the back of the 140, and in the north end of the stope north of cross-cut, the lode shows signs of improvement, and yielding some very fine copper ore. In view of this shoot of ore, improviug as the end is being proceeded with, we have put two men to clear the debris in the level below, so as to make the necessary preparations for further developing it in this direction, and in order to lengthen this piece of available ore ground. The stope in the back of the 120, south of shaft, is worth 15*l.* per fathom, and the stope in back of ditto on footwall of the lode is improving and presenting a better appearance. The dressing of ore is being proceeded with as usual, and fair progress made towards another shipment; in view of this, and to endeavour to get cheap freight to Rotherham, I am in communication with agents on the matter.

[For remainder of Foreign Mines se's to-day's Journal.

TWO GOLD MEDALS.

SOLE MAKERS—
**The LEEDS FORGE CO., Ltd.,**
**Leeds, Yorkshire.**

# FOX'S PATENT
# CORRUGATED FURNACE FLUES,

NOW APPLIED TO OVER

# 1 0 0 0 0 0

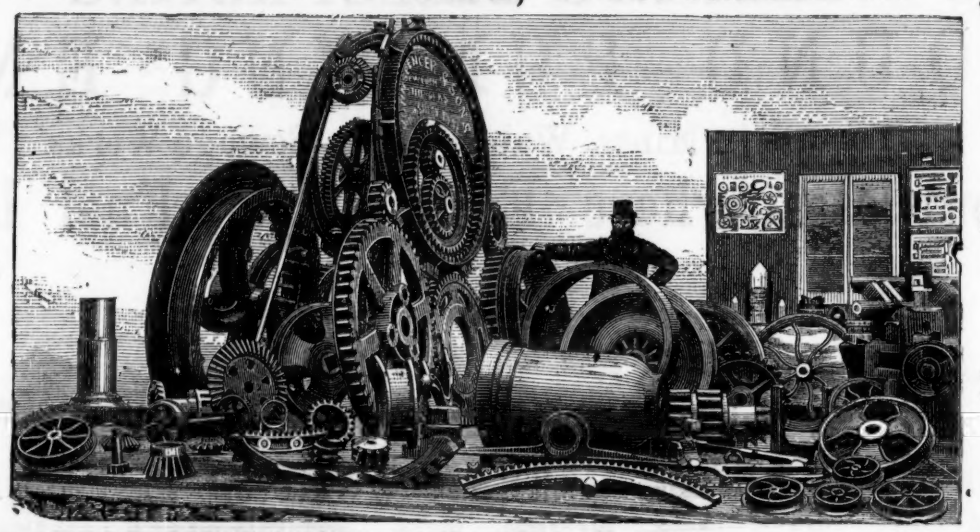
IND. H.P

PARIS, 1878.

PRICE LISTS AND PARTICULARS ON APPLICATION.

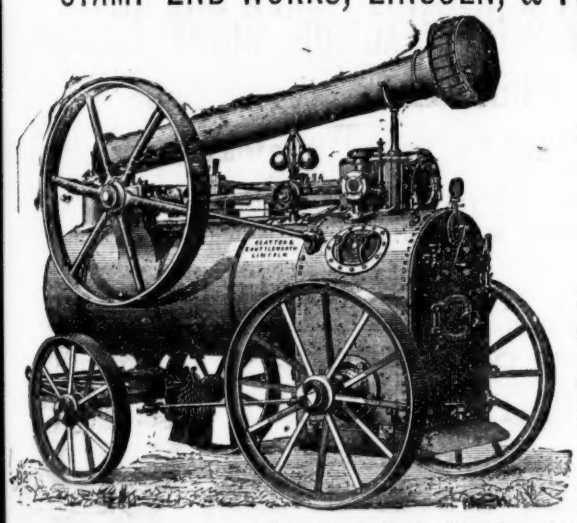
# JOHN SPENCER AND SONS,
## Newburn Steel Works, Newcastle-on-Tyne.

**STEEL**
## CASTINGS.
WHEELS & AXLES
FITTED COMPLETE.
INCLINE PULLEYS AND ROLLERS.
STAMP HEADS AND SHOES
AND EVERY DESCRIPTION OF
**STEEL CASTINGS.**



**STEEL**
## FORGINGS.
RAILWAY SPRINGS AND BUFFERS
JUMPER STEEL,
MINING CAST STEEL
AND
BEST CAST STEEL FOR TOOLS.
IMPROVED VOLUTE SPRINGS.

# CLAYTON AND SHUTTLEWORTH,
STAMP END WORKS, LINCOLN, & 78, LOMBARD STREET, LONDON.



**GOLD MEDALS, AND OTHER PRIZES,**

Have been awarded to CLAYTON AND SHUTTLEWORTH at the various International Exhibitions of all Nations, including
LONDON, 1851, 1862,
PARIS, 1855, 1867, 1878,
VIENNA, 1857, 1866, 1873,
for their

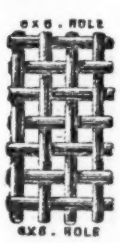
STEAM ENGINES (Portable or Fixed).
THRESHING MACHINES.
GRINDING MILLS.
TRACTION ENGINES, &c.

Catalogues in English and in all the Continental Languages free on application.

**The Royal Agricultural Society of England** have awarded
EVERY FIRST PRIZE TO CLAYTON AND SHUTTLEWORTH
For Portable and other Steam Engines since 1863, and Prizes at every meeting at which they have competed **since 1849.**

# MANCHESTER WIRE WORKS.
NEAR VICTORIA STATION, MANCHESTER.
(ESTABLISHED 1790).

## JOHN STANIAR AND CO.,
Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for
LEAD AND COPPER MINES.
Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper
EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES




*Shipping Orders Executed with the Greatest Dispatch.*

## TO HEADS OF FAMILIES AND PERSONS FURNISHING.
# THOMPSON AND CO.
SUPPLY
## THREE PARCELS OF CROCKERY,
AS UNDER:—

No 1.—One DINNER SERVICE, Marone, Emerald, Blue, or Pink and Gold, for Twelve Persons; one BREAKFAST SERVICE, same choice of Colours and Gold; one TOILET SET, with Slop Jar and Sponge Tray, same choice of Colours and Gold. FREE ON RAIL FOR £10. Quotations for goods of higher quality on application.

No. 2.—One DINNER SERVICE, Ruby, Emerald, or Blus and Gold; one TEA SERVICE (China), same choice of Colours and Gold; one TOILET SET, same choice of Colours and Gold. FREE ON RAIL FOR £2 5s.

No. 3.—One DINNER SERVICE, Emerald or Blue, not Gilt; one TEA SERVICE (Earthenware), ditto ditto; one TOILET SET ditto ditto; one SET JUGS, ditto ditto. FREE ON RAIL FOR £1 5s.

The Goods are of sound quality and sterling value, and the difference in price from what is usually charged in shops is the cost to the public of retail profits and credit.

**Letters to THOMPSON AND CO., STOKE-ON-TRENT.**
Cheques crossed Manchester and Liverpool District Bank, Burslem.

**HULME & LUNDS** SPECIALITIES.
DONKEY PUMPS, MINING PUMPS,
HORIZONTAL PUMPS, TAR PUMPS,
AIR COMPRESSORS,
FIRE ENGINES, STEAM ENGINES.
*WILBURN IRON WORKS*
**SALFORD, MANCHESTER.**

## W. F. STANLEY
MATHEMATICAL INSTRUMENT MANUFACTURER TO H.M.'S GOVERNMENT, COUNCIL OF INDIA, SCIENCE AND ART DEPARTMENT, ADMIRALTY, &c.
MATHEMATICAL, DRAWING, and SURVEYING INSTRUMENTS of every description, of the highest quality and finish, at the most moderate prices.
Price List post free.
ENGINE DIVIDER TO THE TRADE.
ADDRESS—GREAT TURNSTILE, HOLBORN, LONDON, W.C

## HEPBURNS' PUMP LEATHER WATERPROOF
By a special method of preparation this leather is made solid, perfectly close in texture and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—
**HEPBURN AND GALE,**
TANNERS AND CURRIERS,
EATHER MILL BAND AND HOSE PIPE MANUFACTURERS,
**LONG LANE, SOUTHWARK LONDON**
**Prize Medals, 1851, 1855, 18 for**
MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

## TO PARENTS AND GUARDIANS.
AN ELIGIBLE OPPORTUNITY is now offered for the SETTLEMENT of an ACTIVE YOUNG GENTLEMAN IN CANADA. He will be enabled to obtain his profession as a Solicitor in five, or if he be a Graduate in three years. Cost of living about £150. In the meantime he will have active work, and obtain a knowledge of the Dominion, which is destined to become one of the most prosperous of the Colonies. Premium, £100 sterling.
HERBERT C. JONES,
32, Wellington-street, Toronto. Canada Land and Loan Agency.

## ALEX. DEL MAR,
MINING ENGINEER,
Formerly Director of the Bureau of Statistics of the United States, Superintendent of the United States Special Commissioners of Mines, Mining Commissioner for the United States Monetary Commission, author of a "History of the Precious Metals," &c.,
216, SANSOME STREET, SAN FRANCISCO. CALIFORNIA.
Mining Properties surveyed and reported upon. Assays and quantitative analyses made of ores, &c.

PIERCE S. HAMILTON, PRACTICAL GEOLOGIST SURVEYOR, AND MINING ENGINEER AND AGENT, OFFERS HIS SERVICES in either of these capacites to those interested or desirous of investing n MINING PROPERTY in the PROVINCE OF NOVA SCOTIA or elsewhere in the DOMINION OF CANADA.
Having for years filled the administrative position of Chief Commissioner of Mines for Nova Scotia, and having both before and afterwards been himself largely engaged in Mining operations, Mr. HAMILTON has had exceptionally good opportunities of informing himself as to the variety, extent, and character of the mineral deposits of that Province, and as to the most economical and effective method of working them.
ADDRESS—PIERCE S. HAMILTON, HALIFAX, NOVA SCOTIA, DOMINION OF CANADA.

## MAPS OF THE MINES, AND OF UTAH TERRITORY.
FROISETH'S NEW AND REVISED MAP FOR 1875,—Size 40 by 56 inches, scale 8 miles to the inch. Handsomely engraved, coloured in counties, showing the Towns, Settlements, Rivers, Lakes, Railroads, Mining Districts, &c., throughout the Territory, and all the Government Surveys to date. Mounted on cloth, £2; half-mounted, £1 12s.; pocket form, £1.
Also, GENERAL MINING MAP OF UTAH, showing twenty-eight of the principal Mining Districts adjacent to Salt Lake City, and location of the most prominent mines. Price, pocket form, 6s.
Also, NEW MAP OF LITTLE AND BIG COTTONWOOD MINING DISTRICTS showing the location of over Four Hundred Mines and Tunnel Sites, together with the Mines Surveyed for United States Patent. Price, sheets, 6s.; pocket form, 8s.
For sale, and supplied by—
TRUBNER and Co., 57 and 59 Ludgate Hill, London.
B. A. M. FROISETH, Salt Lake City, Utah, U.S..

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors) at their offices, 26, FLEET STREET, where all communications are requested to be addressed.—*November 27, 1880.*